JULY 20, 1957 PAGES 105 TO 154

THE LANCET

Offices: 7, ADAM STREET, ADELPHI, W.C.2
Telegrams: LANCET, RAND, LONDON Telephone: TEMPLE BAR 7228 and 7229

No. III OF VOL. II, 1957
No. 6986 VOL. CCLXXIII
LONDON, SATURDAY, JULY 20, 1957
Founded 1823 PUBLISHED WEEKLY Registered as a Newspaper
Pp. 104—Price 1s. 6d.
Annual Subscription: £3 3s.

6 AUG 2 - 1957
Cont. Copy

"SOROSIL"
DERMAL OINTMENT
for the amelioration of itching in Pruritus, Prurigo, and other inflammatory skin conditions
H. R. NAPP LIMITED
3 & 4, CLEMENTS INN LONDON, W.C.2

THE ESSENTIALS OF FORENSIC MEDICINE
By CYRIL JOHN POLSON, M.D., F.R.C.P.
Barrister-at-Law; Professor of Forensic Medicine University of Leeds
"It is superbly done, for he writes well, lucidly, and sanely, weaving the vivid and the more mundane chapters of forensic medicine, medical ethics, law and insanity into a comprehensive whole that is both informative and readable."—*The Lancet.*
562 pages 30s. net, plus 1s. 6d. postage
The English Universities Press Ltd., 102, Newgate-street, London, E.C.1.

IN THE MENTAL HOSPITAL
Eleven articles reprinted from THE LANCET.
A group of articles chiefly concerned with the value of active occupation and work for mental patients and the means whereby it is best provided.
72 pages. Price 2s. 6d. (postage 4d.)
The Lancet Limited, 7, Adam-street, Adelphi, London, W.C.2

THE LAW AND ETHICS OF DENTAL PRACTICE
By R. W. DURAND, M.R.C.S., L.R.C.P.
Formerly Secretary of the Medical Protection Society
and
D. MORGAN, L.D.S. (Leeds)
Formerly Deputy Dental Secretary of the British Dental Association
Foreword by Professor R. V. BRADLAW, M.D.S. Dunelm, F.D.S., M.R.C.S. Eng.
Professor of Oral Pathology, Durham University
Director, Newcastle-upon-Tyne Dental School
Expert guidance on the many problems which confront the dentist
Demy 8vo 98 + viii Price 7s. 6d. net, plus 7d. postage
Hodder & Stoughton Ltd., 20, Warwick-square, London, E.C.4

PROGRESS REPORT ON BIRTH CONTROL
By L. S. FLORENCE
This book is an account of the findings resulting from an enquiry by the Birmingham Family Planning Association among the patients who registered at their Clinic during 1948.
264 pages 21s. net
Wm. Heinemann Medical Books Ltd., 99, Gt. Russell St., W.C.1

CAREERS IN MEDICINE
Edited by P. O. WILLIAMS, M.A. (Cantab.), M.B., B.Chir., M.R.C.P.
With contributions from 49 eminent medical authorities
Cr. 8vo 292 pages Price 15s. net, plus 1s. 4d. postage
This book outlines the particular qualities of mind, the type and amount of specialised training, required in each branch of the Medical Profession.
". . . it should be in the hands of everyone who has to advise medical students, and certainly should be consulted by every newly-qualified doctor."—*The Practitioner.*
Hodder & Stoughton Ltd., 20, Warwick-square, London, E.C.4

DISABILITIES
AND HOW TO LIVE WITH THEM
by 55 Patients
Demy 8vo 252 pages Price 10s. 6d. net, plus 10d. postage
"As men and women G.P.s will gain much from reading these stories; as doctors they will be in a better position to transmit to their patients some of the courage displayed by those anonymous authors. An altogether admirable book."—*Medical World.*
The Lancet Limited, 7, Adam-street, Adelphi, London, W.C.2

NEW THIS MONTH

CLINICAL PATHOLOGY DATA
By C. J. DICKINSON. *Second Edition.* 110 pages. 20s.

ANATOMIES OF PAIN
By K. D. KEELE. 208 pages, 27 illustrations. 27s. 6d.

THE DIAGNOSIS AND TREATMENT OF ENDOCRINE DISORDERS IN CHILDHOOD AND ADOLESCENCE
By L. WILKINS. *Second Edition.* 556 pages, 497 illustrations. £6 12s. 6d.

CEREBRAL LIPIDOSES
Edited by L. VAN BOGAERT, J. N. CUMINGS and A. LOWENTHAL. 256 pages, 53 illustrations. 42s.

HORMONAL REGULATION OF ENERGY METABOLISM
By L. W. KINSELL *et al.* 272 pages, 36 illustrations. 40s.

NEW RESEARCH TECHNIQUES OF NEURO-ANATOMY
By W. F. WINDLE. 106 pages, 25 illustrations. 36s.

BLACKWELL SCIENTIFIC PUBLICATIONS · · OXFORD

Analgesics

The introduction of Proponesin following development of the active substance—tolpronine hydrochloride—in the B.D.H. research laboratories has widened the effective range of B.D.H. analgesics.

A logical addition to the B.D.H. range

'PROPONESIN'
TRADE MARK

TABLETS OF TOLPRONINE HYDROCHLORIDE

Provide quick-acting, short term effects against the pain of herpes zoster, dysmenorrhoea, toothache, headache, sinusitis and backache.

Each tablet contains 100 mg. of active substance.
Basic N.H.S. prices: Bottle of 10 at 1/8;
50 at 5/-; 250 at 17/6, purchase tax extra.

'TERCIN' TABLETS
TRADE MARK

Remain the preparation of choice in treatment of the joint pains of influenza and arthritic conditions generally.

Each tablet contains: Aspirin 5 gr. Phenacetin 3 gr. and butobarbitone ½ gr.
Basic N.H.S. prices: Bottle of 200 at 4/10 and 1,000 at 24/-.

Literature and specimen packings will gladly be sent, on request

Medical Department

THE BRITISH DRUG HOUSES LIMITED · LONDON N.1

JULY 20, 1957 PAGES 105 TO 154

THE LANCET

A JOURNAL OF BRITISH AND FOREIGN MEDICINE, SURGERY, OBSTETRICS, PHYSIOLOGY, PATHOLOGY, PHARMACOLOGY, PUBLIC HEALTH, AND NEWS

No. 6986 LONDON: SATURDAY, JULY 20, 1957 CCLXXIII

CONTENTS

THE WHOLE OF THE LITERARY MATTER IN THE LANCET IS COPYRIGHT

ORIGINAL ARTICLES

Anoxia in Emphysema
THOMAS SIMPSON, M.R.C.P... 105
Acute Renal Failure Following Intravascular Hæmolysis
Prof. G. M. BULL, F.R.C.P.
A. M. JOEKES, M.R.C.P.
K. G. LOWE, M.R.C.P..... 114
Relationship Between Nausea and/or Vomiting in Early Pregnancy and Abortion
J. H. MEDALIE, M.B..... 117
A Rapid Method of Estimating Blood-glucose Ranges
J. KOHN, MED. DIPL..... 119
Jejunal Stenosis following Mesenteric-artery Occlusion
C. F. HAWKINS, F.R.C.P..... 121

PRELIMINARY COMMUNICATIONS

Failure of "Autoimmune" Antibody to React with Antigen Prepared from the Individual's own Tissues
I. R. MACKAY, M.B.C.P.
LOIS LARKIN
Sir MACFARLANE BURNET, F.R.C.P., F.R.S..... 122
Fat Embolism in Chronic Alcoholism
M. J. G. LYNCH, M.R.C.P.
S. S. RAPHAEL, M.B.
T. P. DIXON, M.D..... 123

MEDICAL SOCIETIES

British Diabetic Association: Banting Memorial Meeting.... 124

NEW INVENTIONS

An Elastic Band for Recording Respirations
J. D. MONTAGU, M.R.C.S..... 126

REVIEWS

Notices of Books..... 125

IN ENGLAND NOW

A Running Commentary by Peripatetic Correspondents... 143

PUBLIC HEALTH

Poliomyelitis..... 151
Influenza..... 151
Colouring Matter in Food..... 151

LEADING ARTICLES

BONE-MARROW FOR TREATMENT OF LEUKÆMIA..... 127
ATTACK ON ANOXIA..... 128
UNITY..... 129

ANNOTATIONS

Adrenal Insufficiency..... 130
Where does Hypertension Begin? 131
Brain Function..... 131
Tuberculosis and Diabetes..... 131
Intussusception in Childhood.... 132
The Child in Hospital..... 132
Rabies Prophylaxis..... 133
Radiation Dosage in Radiography 133

BRITISH MEDICAL ASSOCIATION

Representative Meeting..... 134

CONFERENCES

Poliomyelitis..... 137
Endocrine Aspects of Breast Cancer..... 140

SPECIAL ARTICLES

Health Service Estimates..... 141

PARLIAMENT

Ancillary Dental Workers..... 142
Question Time..... 142

LETTERS TO THE EDITOR

Consultant and Specialist (Dr. H. J. Richardson)..... 144
"Stress" and Mental Disorders (Dr. P. D. Mulkern)..... 144
Sex Chromosomes and Human Sexual Development (Dr. G. I. M. Swyer)..... 144
Multiple Myelomatosis and Macroglobulinæmia (Dr. A. L. Latner, Mr. A. H. Zaki, M.SC.; Dr. R. J. Wieme)..... 145
Employment of Chronic Mental Patients (Dr. J. A. R. Bickford)..... 145
The Human Heritage (Dr. David Rumney)..... 145
Postoperative Collapse due to Adrenal Insufficiency (Dr. J. Shegog Ruddell)..... 146
Division of Intercostal Arteries (Dr. J. B. D. Torr)..... 146
A Thousand Chamber Pots (Mr. G. A. Schmeidler, PH.D.)..... 146
The Liver in Hæmochromatosis (Prof. Theodore Gillman, M.B., Dr. Michael Hathorn, Dr. N. McE. Lamont)..... 146
Treatment of Hirschsprung's Disease by Swenson's Operation (Mr. Barry O'Donnell, F.R.C.S.) 147
The Architectural Function of the Pulmonary Capillaries (Dr. Israel Rappaport)..... 148
Clinical Thermometers (Dr. N. De Nosaquo)..... 148
Packing of Dressings (Dr. J. H. Jones)..... 149
Ileostomy Chemistry (Dr. W. E. Abbott, Mr. Stanley Levey, PH.D., Dr. Harvey Krieger)... 149
Eustachian Self-instillation (Dr. C. Niosi)..... 150
Importation of Poliomyelitis Vaccine (Dr. Margaret Agerholm).. 150
Cæsarean Section..... 151

MEDICINE AND THE LAW

Proof of Diminished Responsibility..... 142
Suppliers Reprimanded..... 142
Danger of Plastic Bibs..... 142

OBITUARY

Andrew John Morland..... 151
Sir Louis Knuthsen..... 152

NOTES AND NEWS

The Middle Class in India..... 152
Nutrition in Africa..... 152
A Patient's Book..... 153

University of Cambridge..... 153
University of London..... 153
University of Durham..... 153
National University of Ireland.. 153
Royal College of Surgeons of England..... 153
Royal Society of Medicine..... 153
Royal College of Physicians of Ireland..... 154
Ciba Awards..... 154
Nuffield Department of Plastic Surgery, Oxford..... 154

Appointments..... 154
Births, Marriages, and Deaths... 154

DQV TABLETS

now available in 3 strengths

DQV 60 · DQV 120 · DQV 240

60 mg., 120 mg., 240 mg. tablets

'Distaquaine' V

THE ORIGINAL BRITISH PENICILLIN V

THE DISTILLERS COMPANY (BIOCHEMICALS) LIMITED

Broadway House, The Broadway, Wimbledon, London, S.W.19. Tel: Liberty 6600 *Owners of the trademark 'Distaquaine'*

PPM6/57B

SOUTHON LABORATORIES

ATHLETES FOOT

FUNGICIDAL OINTMENT + FUNGICIDAL POWDER

ESOBAN U.F.I. OINTMENT

Combines Urea and Ionisable Iodine in a readily absorbed base for systematic treatment of Athletes Foot and other conditions of Fungoid and Infective Origin, also makes an important contribution in the treatment of Pruritus.

Packed in jars 2½ oz., 12 oz. and 2 lb.

Basic N.H.S. Price:

2½ oz. - 2/7d. 2 lb. - 20/10d. (Under 8d. per oz.)

U.F.I. DUSTING POWDER

Should be used in combination with Esoban U.F.I. Ointment for treatment of Athletes Foot—Sprinkle tin permits free dusting of the patient's socks.

Packed in tins 2 oz., bulk 4 lb.

Basic N.H.S. Price:

2 oz. - 2/-d. 4 lb. - 31/2d.

PRESCRIBABLE ON FORM E.C.10.

Detailed Literature and Sample on request

A product of

SOUTHON LABORATORIES LTD.
LONDON, S.W.15.

Preventive Medicine

Although the prominent role played by protective foods in preventive medicine is fully recognised by doctors and nutrition experts, there are still many members of the public who are not sufficiently nutrition minded to appreciate their significance. It has been suggested that by spreading more information on food values, a considerable amount of illness might be avoided, and public money could thus be saved.

A useful protective food—and one which is popular with old and young alike—is Marmite. It supplies the essential B vitamins in a convenient, appetising form.

MARMITE
yeast extract

contains
Riboflavin (vitamin B_2) 1.5 *mg. per oz.*
Niacin (nicotinic acid) 16.5 *mg. per oz.*

Obtainable from chemists and grocers
Special terms for packs for hospitals, welfare centres and schools

Literature on request

MARMITE LIMITED, 35, SEETHING LANE, LONDON, E.C.3

The

MERCK SHARP & DOHME

'Hydro' Quartet

Hydrocortisone preparations for the treatment of lesions of the SKIN, JOINTS, NOSE AND EYES

OINTMENT

'Hydroderm'

'HYDROCORTONE'-
NEOMYCIN-BACITRACIN

For inflammatory conditions of the skin, especially when infection is present. *Tubes of 5 G. and 15 G.*

TABLETS

'Hydrodyne'

'HYDROCORTONE'-ASPIRIN

Anti-inflammatory, anti-rheumatic, analgesic therapy for rheumatic and allied diseases. *Bottles of 100.*

NASAL SPRAY

'Hydrospray'

'HYDROCORTONE'-
'PROPADRIN'-NEOMYCIN

Safe nasal therapy for hay fever, rhinitis, polyposis and similar allergic conditions.
Spray bottles of 15 ml.

EYE DROPS

'Hydroptic'

'HYDROCORTONE'-NEOMYCIN

For inflammatory lesions of the eye, especially when infection is present.
Plastic applicator of 5 ml.

Fuller details on application

MSD MERCK SHARP & DOHME LIMITED, HODDESDON, HERTS.

Product names in inverted commas are Trade Marks

. . . SAUNDERS BOOKS . . .

Sollmann's MANUAL OF PHARMACOLOGY. New (8th) Edition.

An unexcelled source of essential information about all the drugs which may interest the physician—not merely those currently in the therapeutic spotlight. This completely up-to-date revision of a standard and highly respected work will guide you skilfully through the complexities of modern pharmacology.

By TORALD SOLLMANN, M.D., *Professor Emeritus of Pharmacology and Materia Medica, Western Reserve University School of Medicine.* 1535 pages. £7.

AN ATLAS OF CARDIAC SURGERY.

A beautiful atlas that depicts the techniques of America's leading heart surgeons. The author, a thoracic surgeon and a medical artist, has enlisted the help of practically every outstanding surgeon in America.

Prepared by JORGE A. RODRIGUEZ, M.D., *Assistant Professor of Surgical Anatomy, University of Mississippi School of Medicine.* 250 pages. £6 6s.

COLLECTED PAPERS OF THE MAYO CLINIC AND MAYO FOUNDATION. Volume 48. (Papers for 1956).

Describes the most important developments made during the past year at the Mayo Clinic. Only from such an outstanding medical centre as the Mayo Clinic can one get such authoritative discussions on diseases and conditions common to today's practice of medicine.

By The Staff of the Mayo Clinic and Mayo Foundation. 778 pages. £4 7s. 6d.

Robbins' TEXTBOOK OF PATHOLOGY.

A unique and new presentation of pathology that takes a long step forward in establishing a true understanding of disease processes, rather than merely familiarising the physician with morbid anatomy.

By STANLEY L. ROBBINS, *Associate Professor of Pathology, Boston University School of Medicine.* 1351 pages, 993 illustrations. £6 6s.

W. B. SAUNDERS COMPANY LIMITED — **7, Grape Street, LONDON, W.C.2**

The First Multi-Volume Work of its kind

CANCER

Edited by RONALD W. RAVEN, O.B.E. (Mil.), T.D., F.R.C.S.

Joint Lecturer in Surgery, Westminster Hospital Medical School, University of London; Surgeon, Westminster Hospital Teaching Group

Until now, there has never been a multi-volume work on cancer of this scope—the six volumes cover an immense range, taking in research into causation, pathology, geography, occupation, education, detection, clinical aspects, radiotherapy, chemotherapy and public health. The object of the work is to provide facilities for immediate reference to all the advances being made in every field, and it should be read and used by all engaged in the struggle against cancer, whether pathologist, surgeon, physician, radiotherapist, research worker, or epidemiologist.

In Six Volumes and Index Volume (with bibliography) Profusely Illustrated

85s. *net per volume, carriage and packing extra*

Full particulars on application

BUTTERWORTHS · 88 KINGSWAY · LONDON · W.C.2

Showroom: 11-12 Bell Yard, Temple Bar, London, W.C.2

Easily Assimilable

Neo-Ferrum is ferric hydroxide prepared in colloidal form to facilitate rapid and maximal digestion and absorption. It is pleasant to take, does not stain the teeth or cause gastro-intestinal upset. Neo-Ferrum provides the ideal preparation for all iron deficiency anaemia.

Neo-Ferrum

TRADE MARK

PACKINGS: Liquid, tablets and pipette packings for infants.

THE CROOKES LABORATORIES LIMITED · PARK ROYAL · LONDON NW10

Successful control of Functional Uterine Haemorrhage

Amfac glanules contain an active fraction of mammalian liver tissue whose outstanding action is to check menorrhagia and metrorrhagia, especially in puberty and adolescence, without reducing the normal menstrual flow.

The treatment has proved most successful with young patients up to 25 years old. Especially recommended when other methods such as curettage fail to prevent abnormal bleeding.

Supplied as fused gelatine capsules in bottles of 25, 50, 100, 500 and 1000.

Literature available on request.

AMFAC GLANULES

Regd. Trade Mark

THE ARMOUR LABORATORIES
(Armour & Company Ltd.)
Hampden Park, Eastbourne, England
Telephone: Hampden Park 740
Telegrams: 'Armolab' Eastbourne

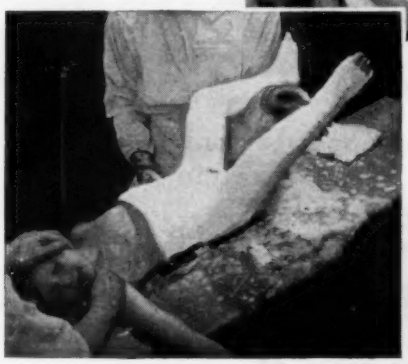
Management of congenital dislocation of the hip

1. *Child anæsthetized—position of limbs maintained by assistants whilst the orthopædic surgeon applies the bandages; Gypsona P.O.P. bandages being applied over padding protecting bony prominences.*

The construction of a cast for this condition calls for special skill by the operator and exceptionally high quality in the materials used, if the prognosis is to be favourable.

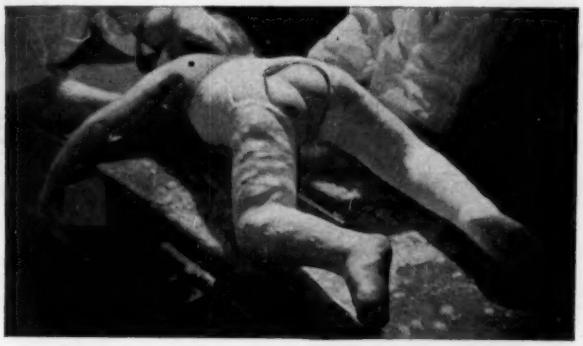
Gypsona P.O.P. bandages have the finest grade plaster—re-ground and sieved to a degree not found in ordinary commercially available plaster of paris.

The fast-setting plaster is firmly fixed to the cloth and the resultant casts give a brilliant creamy white and porcelain-like hard finish, thus staying cleaner and lasting longer than casts made from hospital-made bandages.



2. *Similar to above—surgeon moulding plaster in groin region.*
4. *Completed plaster—anterior aspect.*

3. *Surgeon completing the plastering of left leg and foot—anæsthetic discontinued.*
5. *Completed plaster—posterior aspect.*



Materials used in the construction of the cast illustrated here were: Nine 6″ x 3 yd. and four 4″ x 3 yd. Gypsona bandages.

Gypsona
TRADE MARK
PLASTER OF PARIS BANDAGES B.P.C.
an S&N product
SMITH & NEPHEW LTD., WELWYN GARDEN CITY, HERTS.

new

"CPL" ionex-tabs provide day-long or night-long therapeutic effect on a single dose

advantages:

(1) one dose gives 10-12 hour relief
(2) optimal blood level maintained throughout
(3) minimal toxicity
(4) action independent of physiological factors

asmapax* sustained action 'ionex-tabs'

10-12 hours freedom from bronchospasm

formula: ephedrine-resinate 100 mg. (containing ½ gr. ephed. hcl.), theophylline 65 mg., bromvaletone 150 mg., mephenesin 50 mg.
dosage: 1-2 tablets on rising and on retiring.
basic N.H.S. cost: 30 tablets 5/-.

dexten* sustained action 'ionex-tabs'

day-long appetite control plus all day mood elevation

formula: dexamphetamine-resinate 25mg. (containing 10mg. dexamphet. sulph.)
dosage: ½-1 tablet at breakfast time.
basic N.H.S. cost: 30 tablets 2/6.

barbidex* sustained action 'ionex-tabs'

day-long relief of anxiety and depression

formula: dexamphetamine-resinate 25mg. (containing 10mg. dexamphet. sulph.) phenobarbitone 1 gr.
dosage: ½-1 tablet at breakfast time.
basic N.H.S. cost: 30 tablets 3/10.

In "CPL" ionex-tabs† controlled ionic exchange evenly feeds the therapeutic agents into the blood stream at optimal level for 10-12 hours independent of physiological factors. (*'ionex-tabs' are not enteric coated*).

* regd. trademark † patents pending

clinical samples, literature and case reports sent on request

Medical Dept., Clinical Products Ltd., Richmond, Surrey

Designed for Protection...

An example of Thirteenth Century Armour

Nobecutane
Trade Mark

The sterile spray-on plastic wound dressing. Transparent, impermeable to bacteria but permeable to air and water vapour. Washable but waterproof.

NEW QUALITY now available

The new improved quality retains all the advantages of the original product, but has the **additional advantage of remaining cleaner for longer than any traditional dressing.**

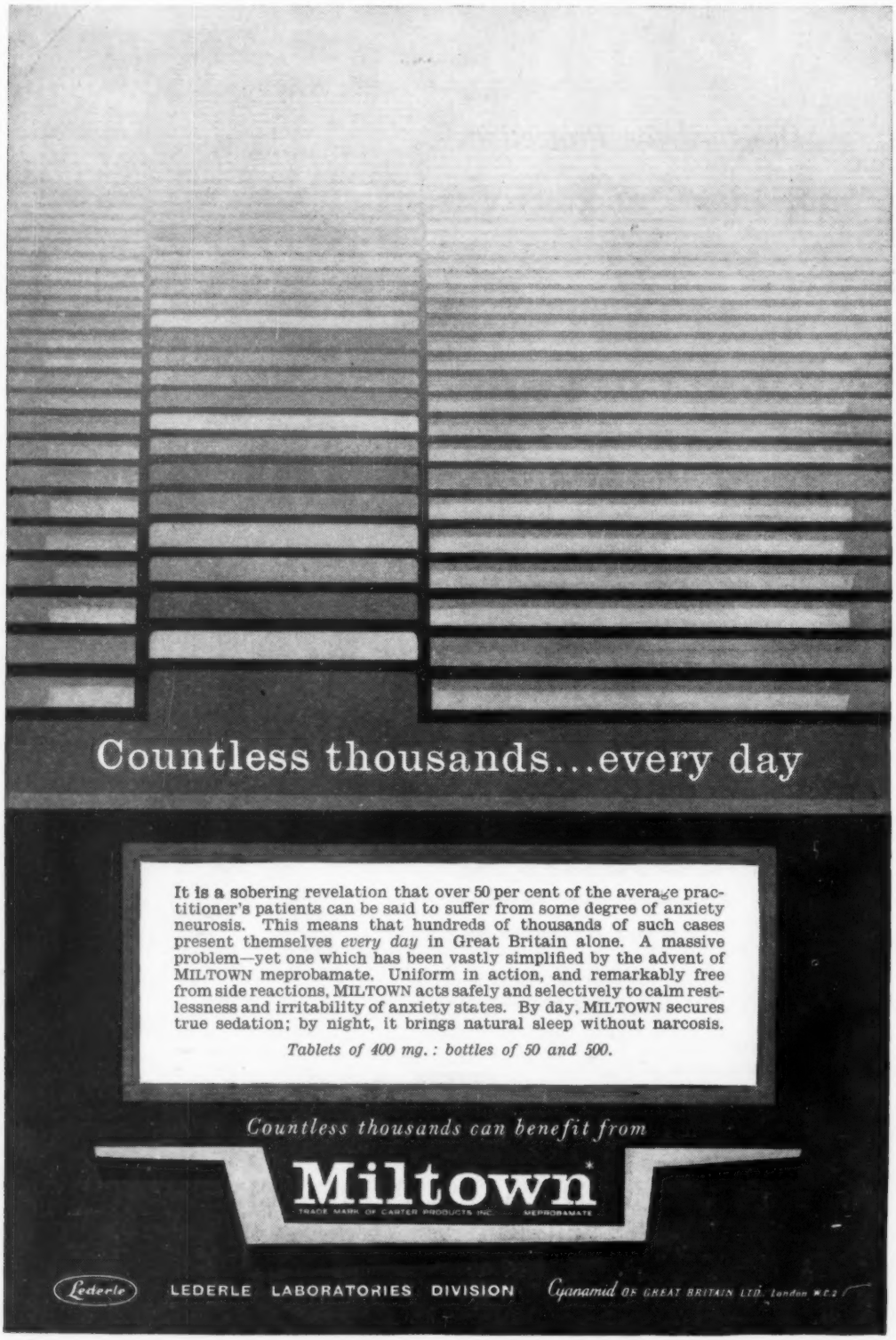
Available in 50 ml. bottles and 100 & 300 ml. sprays.

Further information gladly supplied by the Medical Information Department

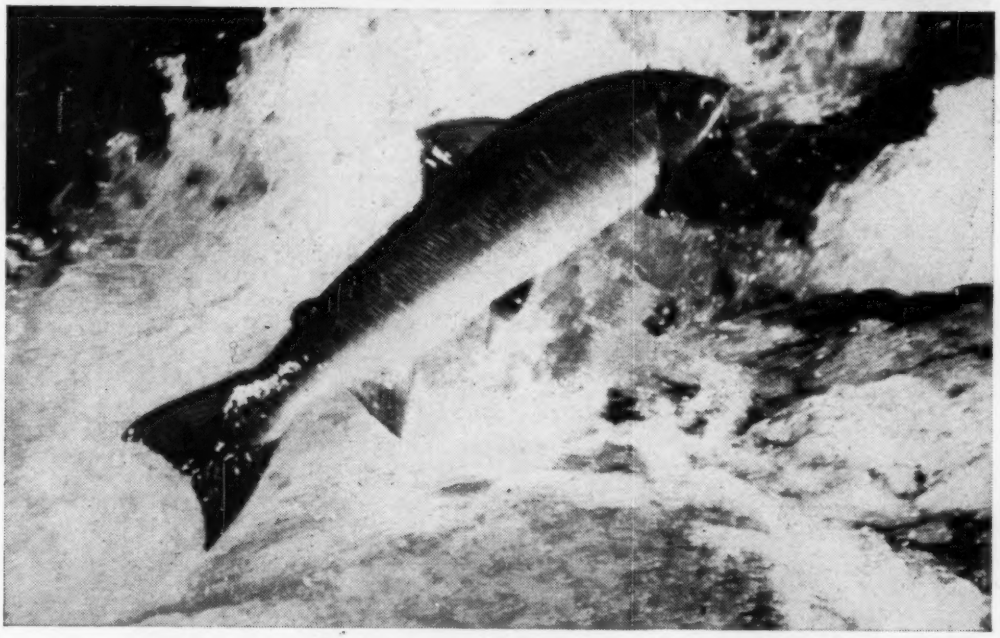
EVANS MEDICAL

EVANS MEDICAL SUPPLIES LIMITED
SPEKE, LIVERPOOL 19 • (HUNTS CROSS 1881)
London Office: Ruislip, Middlesex (Ruislip 3333)

1004


Countless thousands...every day
It is a sobering revelation that over 50 per cent of the average practitioner's patients can be said to suffer from some degree of anxiety neurosis. This means that hundreds of thousands of such cases present themselves *every day* in Great Britain alone. A massive problem—yet one which has been vastly simplified by the advent of MILTOWN meprobamate. Uniform in action, and remarkably free from side reactions, MILTOWN acts safely and selectively to calm restlessness and irritability of anxiety states. By day, MILTOWN secures true sedation; by night, it brings natural sleep without narcosis.
Tablets of 400 mg.: bottles of 50 and 500.
Countless thousands can benefit from
Miltown*
TRADE MARK OF CARTER PRODUCTS INC. — MEPROBAMATE
Lederle
LEDERLE LABORATORIES DIVISION
Cyanamid OF GREAT BRITAIN LTD. London W.C.2

A surge, a flick...



...a leap in the air

Responding to the 'call of the river' the salmon, a silver blue shaft, plunges through miles of sea—evading its enemies—the lamprey, the seal and the otter. It climbs the rocky waterways of the river until at last it reaches the salmon redds—the cool soft currents of its breeding ground. Through muscle and good technique it overcomes the barriers set up by Nature.

A barrier set up by Nature in the human body tends to be more baffling, and medicine is faced with the task of finding a way to overcome it. One such barrier, the *mucosal block* keeps a great many patients constantly on the verge of iron deficiency anaemia. When oral iron is administered to an anaemic patient the Hb level is raised, but the very effect of this is to increase the efficiency of the mucosal block. The more the Hb level rises, the more effective the block becomes. Depleted body iron reserves remain depleted. The patient is never buffered against relapse.

But like the steep river gradient the natural barrier to iron can be overcome—through muscle and good technique. *Intramuscular iron by-passes the mucosal block.* Fully absorbed and fully utilised, it not only raises the Hb level, but also replenishes body iron stores.

PRESCRIPTION INFORMATION. *Each 2 ml. ampoule of Imferon will raise the Hb about 1.5% (5 ml. about 4%) as well as contributing to the replenishment of body iron stores. Imferon is available in ampoules of 2 ml. and 5 ml. in boxes of 10 and 5 ampoules respectively. A simple dosage calculator and notes on intramuscular injection technique for nurses are available on request.*

Imferon Trade Mark Iron-Dextran Complex **INTRAMUSCULAR IRON**

BENGER LABORATORIES LIMITED · HOLMES CHAPEL · CHESHIRE BENGER

PARENTROVITE

Injectable B complex with vitamin C

A massive dose of injectable B complex with vitamin C . . . to restore normal cerebral functions in toxic states due to narcotic or barbiturate drugs, alcohol, or acute infections.

In boxes of 3 pairs of ampoules. *Hospital pack also available.*

A preparation **OROVITE,** containing the same B complex vitamins in high concentration for oral administration, is also available. *In tablets and elixir.*

Two groups of preparations containing the vitamin B complex in less massive concentration are: **BECOVITE & BEFORTISS.** *In tablets, ampoules and elixirs.*

VITAMINS LIMITED (DEPT. B.3.), UPPER MALL, LONDON, W.6.

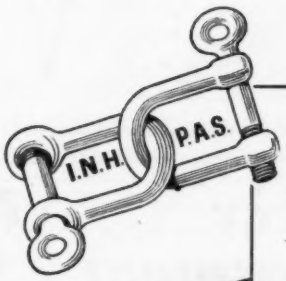
* DIPASIC

Tablets of 100 mg. of isonicotinic acid hydrazide-p-aminosalicylate

The oral chemotherapeutic for TUBERCULOSIS

"In some circumstances conditions responded afresh to Dipasic after the possibilities of INH/PAS therapy had been completely explored. Such evidence indicates that a further course of treatment with the chemotherapeutic agent Dipasic is by no means without prospect of success."

Praxis, Revue Suisse de Medecine, 45, 1045, (1956).



DIPASIC IS AVAILABLE FOR INVESTIGATION

GEWO

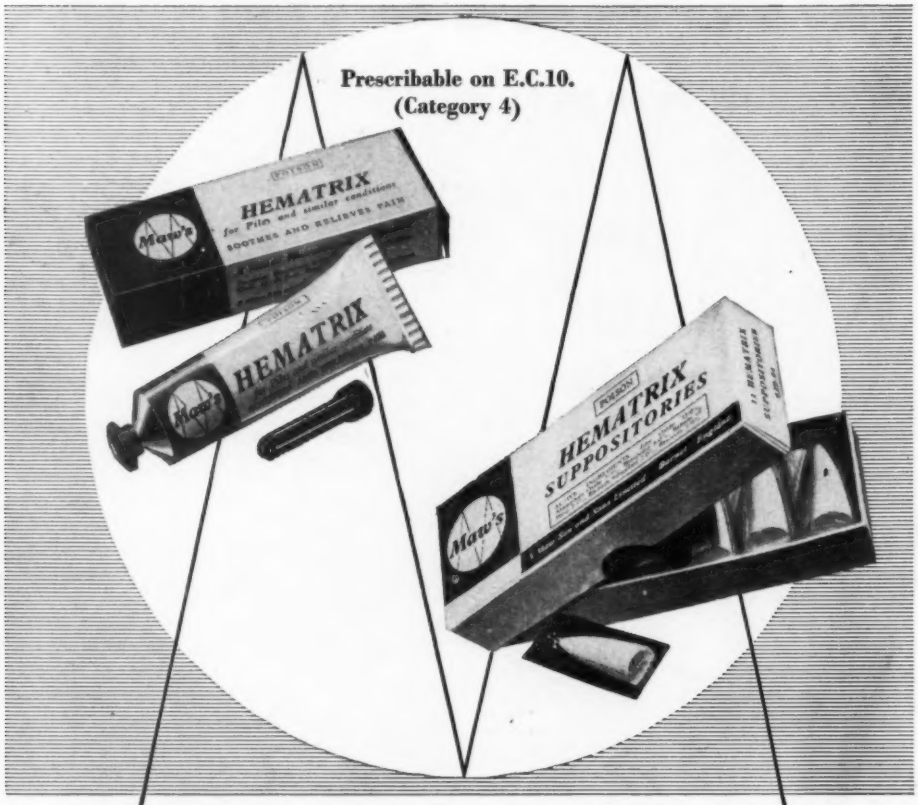
* *DIPASIC is a chemical compound formed by the combination of INH and PAS in molecular proportions*

Literature available on request.

BENGUE & COMPANY LTD. *Manufacturing Chemists*

MOUNT PLEASANT ▸ ALPERTON ▸ WEMBLEY ▸ MIDDLESEX

Bengue & Co. Ltd. make "Dipasic" available in the United Kingdom by arrangement with Ed. Geistlich Sons Ltd., Wolhusen (Switzerland)



For the treatment of haemorrhoids, pruritus ani, and inflammatory eczematous lesions in the anal region.

Hematrix Ointment

HEMATRIX is designed for the immediate relief of itching and localised pain through progressive treatment of the enlarged and varicose tissues by mild antacid astringent action. HEMATRIX acts promptly, effectively and thoroughly, promoting the disappearance of subjective symptoms.

Hematrix Ointment is presented in a tube with an applicator for internal use, and contains:

BENZOCAINE	6%
ALUMIN. OXIDE	7·5%
ZINC OXIDE	15%
BALSAM PERU	2·5%

Hematrix Suppositories

An alternative method with the inclusion of Bismuth Subgallate and Resorcin in the formula gives added value in pruritus and sepsis. Also gives maximum relief from pain and itching.

The distinctive straight-sided, conical shape is selected for giving prolonged contact with the anal canal, and greatest ease of insertion. The more gradual displacement of the orifice so permitted is of marked benefit where fissure is present.

Each suppository is plaquetted in transparent acetate and supplied in boxes of 12.

Maw's

S Maw Son and Sons Limited Barnet England

Now Available—

Parenteral

DRAMAMINE

(BRAND OF DIMENHYDRINATE)

1 **In the presence of nausea or vomiting**

2 **For more prompt action**

Dramamine is now firmly established for the prevention and treatment of nausea, vomiting and vertigo arising from travel, pregnancy, Ménières Disease and other labyrinthine disorders.

Now available **for injection** in multi-dose vials of 5 c.c., each vial containing 50 mg. dimenhydrinate per c.c. Its administration parenterally is indicated in those cases where successful oral medication is difficult or impossible. When speedier action is required, parenteral administration of Dramamine will produce a quicker effect and will give prompt, symptomatic relief.

Dramamine solution may be injected intramuscularly without dilution, but for intravenous injection each c.c. should be diluted to 10 c.c. with normal saline and administered over a period of not less than two minutes.

DRAMAMINE is a Registered Trade Mark

G. D. Searle & Co., Limited, High Wycombe, Bucks.
Tel. *High Wycombe* 1770.

SEARLE

DRV: 177

THE *pH* PROBLEM

To plant or patient, a low pH can be quite a problem. It may limit distribution of a species such as the Clustered Bellflower: it may affect the well-being of the ulcer patient to such an extent that he is forced to limit his activities. But control of internal environment is simply achieved by the patient on Aludrox treatment. The pH of the stomach contents is stabilized at a level at which both digestion and mucosal repair may proceed unhindered. And the patient, freed from discomfort and restrictions in diet, is allowed to continue with a more normal life.

ALUDROX* *(Aluminium Hydroxide Gel)*

CONTROLS HYPERACIDITY

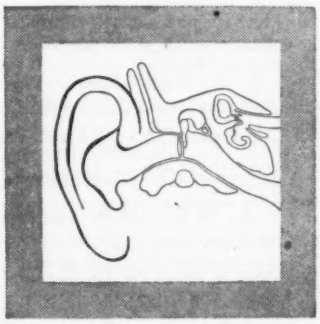
PACKS:
5.6% colloidal suspension in bottles of 6, 12 and 80 oz.
13 grain tablets in boxes of 60 & dispensing pack of 500.

**Registered trade mark*

Wyeth JOHN WYETH AND BROTHER LIMITED, CLIFTON HOUSE, EUSTON ROAD, LONDON, N.W.1
A.3

simpler, swifter, surer
treatment for ear infection

CHLOROMYCETIN* Ear Drops greatly reduce the time and effort necessary to treat suppurative otitis media, chronic otorrhoea, and infections of fenestration and mastoid operation cavities. Treatment can be conveniently carried out, if necessary in the patient's home, and is effective in a matter of days as compared with previous techniques requiring long and tedious application under close supervision.



CHLOROMYCETIN *Trade Mark

EAR DROPS 10%

(Chloromycetin 10% in propylene glycol) in 5 c.c. vials, with dropper, & bottles of 100 c.c.

Parke, Davis
& Company Limited (Inc. U.S.A.)
HOUNSLOW, MIDDLESEX
Telephone Hounslow 2361

382

*o 15

CHEMOTHERAPY OF TUBERCULOSIS

Calcium B-PAS

WANDER

the newest proven modification of PAS for safe, acceptable, convenient and therapeutically reliable performance in combined regimens with Isoniazid.

B-PAS (Wander), 4-benzoylamino-2-hydroxybenzoate, first introduced by our Research Laboratories in 1948, is an acknowledged contribution to tuberculotherapy.

ADVANTAGES

CALCIUM B-PAS (Wander) is virtually insoluble.
It provides high blood levels of extended duration.
It is practically tasteless.
It is well tolerated and best suited for domiciliary use.

MULTIPLE PRESENTATION FOR COMBINED REGIMENS

CALCIUM B-PAS (Wander) is available as such in two convenient forms: Powder and Cachets. Content in each form is ranged so that the daily regimen is simplified. The 3.5 g. Powders taken with a draught of water or milk are especially acceptable. For combined regimens of B-PAS and INAH, 'B-PASINAH' Powders and Cachets according to preference supply the advantage of concurrent therapy in readily acceptable form which practically ensures the patient's co-operation in carrying out instructions.

PACKINGS

CALCIUM B-PAS WANDER

Powders: Tins of 150 and 500 x 3.5 g. envelopes
Cachets: „ „ 80 and 400 x 1.0 g.
Sodium B-PAS (Wander) also available in 1.5 g. Cachets

'B-PASINAH' (B-PAS plus Isoniazid)

Powders: Calcium B-PAS (Wander) 3.5 g.
Isoniazid ... ... 87.5 mg.
Tins of 150 and 400

Cachets: Calcium B-PAS (Wander) 1 g.
Isoniazid ... ... 25 mg.
Tins of 100 and 500

Full Abstracts from Literature on B-PAS, also details of institutional quantities and prices sent on request.

'PASINAH' Cachets of 1.5 g. Sodium PAS and 17, 25, 33 or 50 mg. Isoniazid also available.
Tins of 100 and 500

All Wander tuberculostatic products are obtainable from usual pharmacists or direct from

A. WANDER LIMITED
42 Upper Grosvenor Street, Grosvenor Square, London W.1

CANADA: A. Wander Ltd., Peterborough, Ontario. AUSTRALIA: A. Wander Ltd., Devonport, Tasmania. NEW ZEALAND: A. Wander Ltd., Christchurch. INDIA: Khatau Valabhdas & Co., Indian Globe Chambers, Fort Street, Fort, Bombay, 1. PAKISTAN: Grahams Trading Co. (Pakistan) Ltd., P.O. Box. 30, Karachi. CEYLON: A Baur & Co. Ltd., Colombo.

M 399

In Hypertension

RAUWILOID

Reduces the pressure gradually and safely . . .

Of *proved* value in the treatment of mild to moderate hypertension, 'Rauwiloid' is a purified and standardized fraction of *Rauwolfia serpentina* in tablet form. It lowers elevated blood pressure *gradually*, slows the pulse rate, and so reduces cardiac effort. A calm, tranquil sense of well-being is induced, without drowsiness, and with little impairment of alertness. Dosage is not critical, and there are no important side-effects or contra-indications. Mental depression is unlikely to be encountered when 'Rauwiloid' is used in the recommended dosage. It is the medicament of choice for hypertension in its early stages, in order to arrest progression.

'Rauwiloid' contains 2 mg. of the active hypotensive alkaloids of *Rauwolfia serpentina* per tablet, undesirable constituents of the crude root being excluded by the extraction process.

Dosage is simple—two tablets taken at bedtime.

Full literature on request.

RIKER

'Rauwiloid' is a registered trade-mark. Regd. Users:

RIKER LABORATORIES LIMITED

LOUGHBOROUGH LEICS

ADRENOXYL

Reduces the mean bleeding-time

Adrenoxyl reduces the mean bleeding-time by decreasing the permeability and increasing the contractility and resistance of the capillary wall.

A dry field at operation

Adrenoxyl has been successful in diminishing capillary bleeding in a wide range of surgical operations. It has proved particularly useful in ear, nose and throat, ophthalmic and plastic surgery. In plastic surgery of the face it has been reported that, post-operatively, there is less swelling and bruising when Adrenoxyl has been used.

No side effects

Adrenoxyl does not have any side effects or contraindications. It does not affect blood coagulation, blood pressure or pulse rate and does not possess any sympathomimetic properties.

In medical conditions

Adrenoxyl has been used with success in those medical conditions associated with capillary fragility.

In the British Medical Journal (April 21st, 1956) a correspondent confirmed the value of Adrenoxyl in providing a dry field for the surgeon and in shortening the duration of the operation.

Packs

Ampoules: Boxes of 6 and boxes of 50.
Each ampoule contains 0.75 mg. of adrenochrome monosemicarbazone dihydrate.

Tablets: Tubes of 25 and bottles of 500.
Each tablet contains 2.5 mg. of adrenochrome monosemicarbazone dihydrate.

The best results are obtained when both tablets and ampoules are used.

HORLICKS LIMITED

Pharmaceutical Division Slough Bucks

Literature and samples are available on request to the Medical Information Dept.

Serpasil

(the alkaloid reserpine from Rauwolfia)

ANTIHYPERTENSIVE

GRADUAL AND SUSTAINED REDUCTION

OF BLOOD PRESSURE

SYNERGISTIC EFFECT WITH OTHER

ANTIHYPERTENSIVES

MODERATE SLOWING OF HEART-RATE

CALMING EFFECT

Tablets of 0.1 mg. and 0.25 mg. in bottles of 25, 100 and 500.
Elixir containing 0.25 mg./5 c.cm. in bottles of 100 c.cm. 1 mg. and 4 mg. tablets, 1 mg. and 2.5 mg. ampoules also available.

C I B A

'Serpasil' is a registered trade mark. Reg. user

CIBA LABORATORIES LIMITED, HORSHAM, SUSSEX

Telephone: Horsham 4321. Telegrams: Cibalabs, Horsham.

8/6

3 essentials to sound clinical IRON replacement

In post-haemorrhagic states; as a therapeutic or precautionary measure during and after pregnancy; in adolescents, old people and those of unsound dietary habits, Ferraplex B is ideal for iron-deficiency anaemias of all kinds.

1 It contains adequate FERROUS iron in a form yielding rapidly increased and sustained haemoglobin levels.

2 The supplements it contains—copper, complete vitamin B complex, ascorbic acid—ensure that not only the additional iron but that present in the diet is fully utilised for haemopoiesis.

3 It is extremely well tolerated by patients of all ages, even those who usually react unfavourably to unmodified doses of iron salts.

COMPOSITION

The average daily dose of six FERRAPLEX B tablets contains:

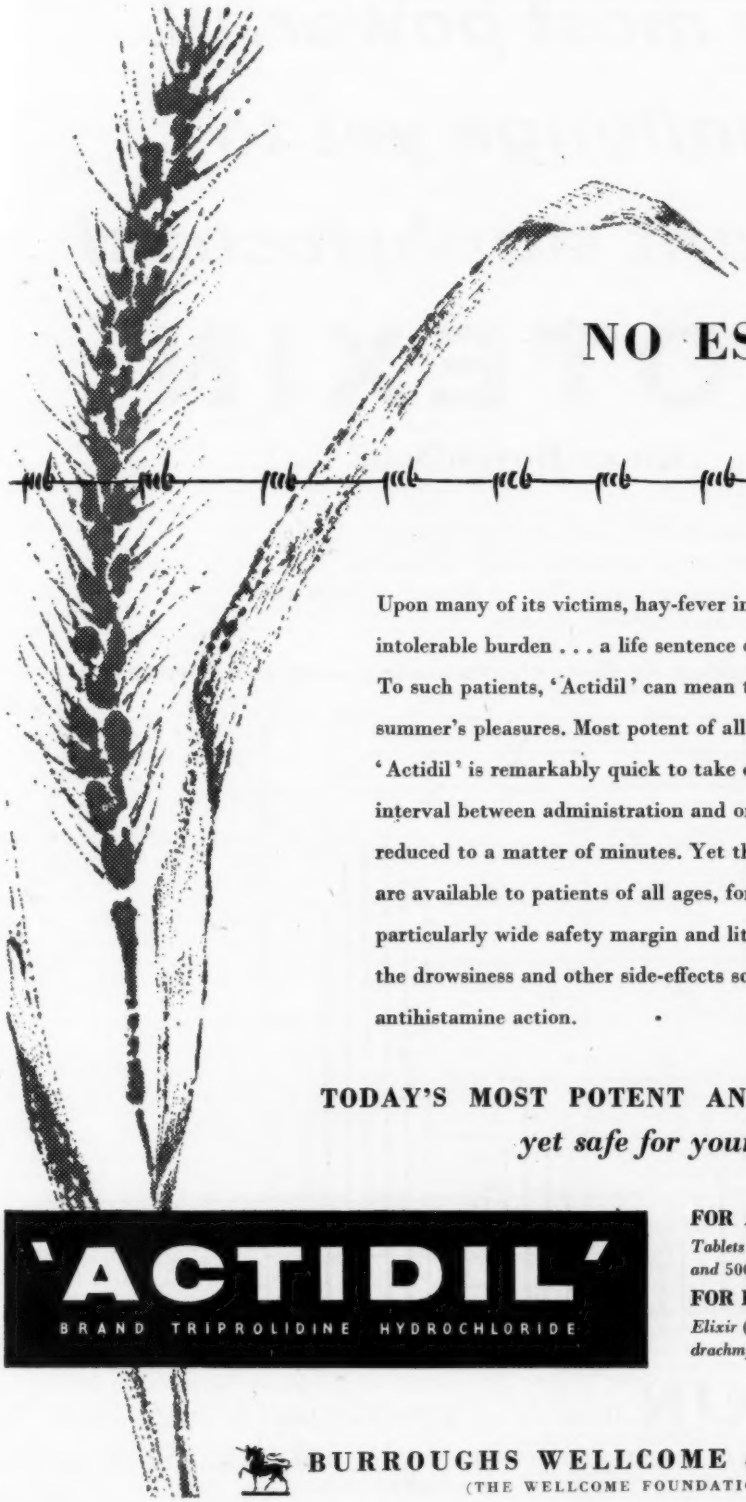
FERRI SULPH. EXSICC., B.P. . . . . 1 gramme
COPPER CARBONATE . . . . . 2 mg.
ASCORBIC ACID (Vitamin C) . . . . . 50 mg.

NATURAL VITAMIN B COMPLEX EXTRACT: 2 grammes *prepared from brewers' yeast and including*
Aneurine hydrochloride (Vitamin B_1) . . . 3 mg.
Riboflavine (Vitamin B_2) . . . . . 6 mg.
Nicotinamide . . . . . 30 mg.
and all the other naturally occurring factors of the vitamin B complex.

Bottles of 50 tablets: 5/3d (Retail); 250 tablets 15/6d (Basic N.H.S. price).

FERRAPLEX B

C. L. BENCARD LTD · PARK ROYAL · LONDON · N.W.10.



NO ESCAPE?

Upon many of its victims, hay-fever imposes an almost intolerable burden . . . a life sentence of disrupted summers. To such patients, 'Actidil' can mean the rediscovery of summer's pleasures. Most potent of all antihistamines, 'Actidil' is remarkably quick to take effect. Indeed, the interval between administration and onset of relief has been reduced to a matter of minutes. Yet these exceptional benefits are available to patients of all ages, for 'Actidil' has a particularly wide safety margin and little tendency to evoke the drowsiness and other side-effects so often associated with antihistamine action.

TODAY'S MOST POTENT ANTIHISTAMINE
yet safe for your youngest patient

'ACTIDIL'
BRAND TRIPROLIDINE HYDROCHLORIDE

FOR ADULTS
Tablets (2·5 mgm.) : Bottles of 25, 100 *and* 500
FOR INFANTS AND CHILDREN
Elixir (1 mgm. 'Actidil' per fluid drachm) : Bottles of 20 fl. oz.

BURROUGHS WELLCOME & CO., LONDON
(THE WELLCOME FOUNDATION LTD.)

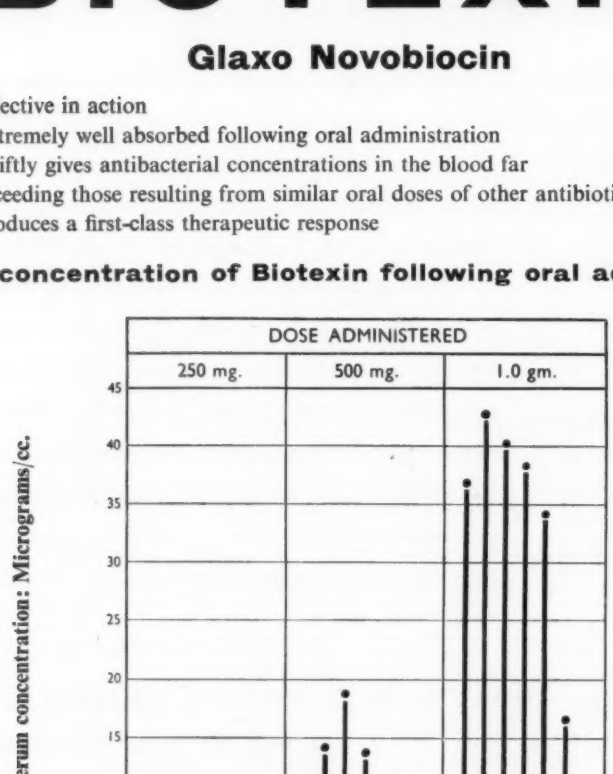
The most powerful challenge yet to resistant staphylococci

BIOTEXIN

Glaxo Novobiocin

★ Selective in action
★ Extremely well absorbed following oral administration
★ Swiftly gives antibacterial concentrations in the blood far exceeding those resulting from similar oral doses of other antibiotics
★ Produces a first-class therapeutic response

Serum concentration of Biotexin following oral administration



BIOTEXIN TRADE MARK *Tablets: 125 mg. of novobiocin sodium. Bottles of 32 and 100*

GLAXO LABORATORIES LTD., GREENFORD, MIDDLESEX BYRon 3434

Subsidiary Companies and Agents in most Countries

ANOXIA IN EMPHYSEMA
ITS RELIEF BY OXYGEN

THOMAS SIMPSON
M.D. Leeds, M.Sc. Northwest. Univ., Chicago, M.R.C.P.
PHYSICIAN, CHASE FARM HOSPITAL, ENFIELD, MIDDLESEX

"Partial anoxæmia means not a mere slowing down of life but progressive and perhaps irreparable damage to living structure."—J. S. HALDANE (1919).

IN patients with emphysema, a respiratory infection may produce anoxia, and the administration of oxygen for relief of this anoxia may precipitate carbon-dioxide narcosis (Comroe et al. 1950, Westlake et al. 1955). Hence the wisdom of using oxygen in this condition has been questioned (Flint 1954).

It has long been appreciated that severe anoxia can have profound physiological effects, even death. The celebrated balloon ascent by Tissandier, Sivel, and Crocé-Spinelli in 1875, in which Tissandier alone survived, proved this beyond doubt; and in the second world war, when aircraft ascended to heights where additional oxygen was obligatory, there were accidental deaths from anoxia. At necropsy in such cases widespread cellular changes were found in most of the internal organs, especially the liver and the heart (Kritzler 1944, Lewis and Haymaker 1948).

At an altitude of 25,000 ft. or more, where (without additional oxygen) the arterial oxygen saturation is 50% or less, death may take place after twenty to thirty minutes' exposure (Armstrong 1952). Since a respiratory infection in the emphysematous often produces an arterial oxygen saturation of 50% or less, it is not surprising that Westlake, Simpson, and Kaye (1955) say that in such circumstances severe anoxia should be relieved, regardless of the risk of carbon-dioxide narcosis—which may be reversible.

When I decided to investigate further the effects of anoxia, clinical experience dictated that the systems chosen for study should be the central nervous, cardiovascular, and (in greater detail) hæmopoietic, hepatic, and renal. The profound organic changes which I found reinforced my conviction that anoxia should be relieved whenever possible. Accordingly I went on to examine the factor or factors of importance in determining carbon-dioxide narcosis, in order to find out how this complication of oxygen therapy can be avoided or at least minimised.

Patients and Methods

In the period from December, 1953, to January, 1956, 193 patients with emphysema were studied—61 inpatients with an acute respiratory infection, and 165 outpatients, including 33 of the patients previously studied in hospital.

From May, 1954, onwards samples of arterial blood were taken under local analgesia from the brachial artery of each patient on admission to hospital, at intervals during the illness, and on recovery. Samples were also taken in the same way from outpatients.

The samples were analysed for oxygen content, oxygen capacity, and total carbon-dioxide content of the plasma by the method of Van Slyke and Neill (1924). Blood pH was measured at room-temperature on a Cambridge pH-meter by the Stadie electrode system. The observed pH was corrected to 38°C by using Rosenthal's (1948) factor. Arterial carbon-dioxide tension was calculated from the total carbon-dioxide content of the plasma and the pH by using the Henderson-Hasselbach equation. The main source of error in these determinations concerns the pH, and to determine the reproducibility of the results three separate arterial samples taken in one day were examined from each of 8 patients who had no respiratory disease. Dr. Richard Doll regarded the results as reproducible, and estimated that with one observation the error should be not more than 0·38%, provided the calibration of the apparatus remained unaltered. This was therefore standardised with pH 4 and pH 7 buffers before and after each measurement; the result was accepted only when this check was satisfactory.

Other laboratory determinations, which were done only as occasion demanded, were of the red-cell count, the blood-urea level, and the prothrombin activity (Quick et al. 1935). The red-cell count, the packed-cell volume, and the blood-urea level were estimated on arterial blood, and the prothrombin activity on venous blood. Four red-cell counts on each specimen of blood reduced the possible error to not more than 200,000 cells per c.mm., which was the greatest accuracy achieved by Smith et al. (1924–25). The hæmoglobin (Hb) was calculated from the oxygen capacity. If the prothrombin activity was found to be reduced, qualitative tests were made for factors V and VII in the blood-plasma (Biggs and Macfarlane 1953). The plasma-iron level was estimated by the method of Ramsay (1954).

Normal Values

For orientation in considering the findings described in these investigations the following data, derived from Sunderman and Boerner (1949), are helpful:

Arterial blood:	
pH	7·35–7·45
Carbon-dioxide tension	35–45 mm. Hg
Oxygen saturation	95–97 %
Oxygen capacity	18–24 vol. %
Hæmatocrit (P.C.V.)	40–54 %
Mean corpuscular volume (M.C.V.)	78–94 c.μ
Mean corpuscular hæmoglobin (M.C.H.)	27–32 μμg.
Mean corpuscular hæmoglobin concentration (M.C.H.C.)	32–38 %
Plasma-iron (males) (Ramsay 1954)	112–255 μg. per 100 ml.

Illustrative Case-reports

1. *Mental Symptoms in Acutely Anoxic Emphysematous Patient*

The following case-report of a patient not included in the present series has been selected for illustrative purposes because of the clarity of the photographs of the brain sections—not because cases showing mental symptoms are rare.

A man, aged 56, when first seen in January, 1952, had been pensioned from the police force in 1945 because of "chest trouble." His daughter said that he had always been quiet and even-tempered, but that, since contracting a bad chest cold a week ago, he had been in a sort of coma, irrational, and very blue.

Condition on Admission

He was deeply cyanosed and mentally confused but realised in his lucid moments that he was so. Examination of his lungs showed loss of cardiac dullness, hyper-resonance, and poor air-entry everywhere, especially at the bases. Moist sounds were heard in most lung areas, but there was no evidence of consolidation. His pulse-rate was 120 and blood-pressure 120/80 mm. Hg. His venous pressure in the neck was raised, but there was no œdema of his feet or his sacrum; he had albuminuria. The fundal veins were extremely dilated and dark, the papilla being pink but not œdematous. His hands twitched.

Treatment and Progress

He was given penicillin and put in an oxygen tent but quickly went into coma. Out of the tent he recovered consciousness. Although in and out of the tent for the next twenty-four hours, he was never again unconscious. At the end of this time he refused all treatment, and examination became impossible because he suspected that all who came near him "were up to something." He stated that he would commit suicide and was transferred to a mental-observation ward at the North Middlesex Hospital, Edmonton. In the ambulance he attempted suicide. Two days after admission he became extremely cyanosed and lapsed into coma. Three days later he was more comfortable though confused, but the next day he again became very blue and died.

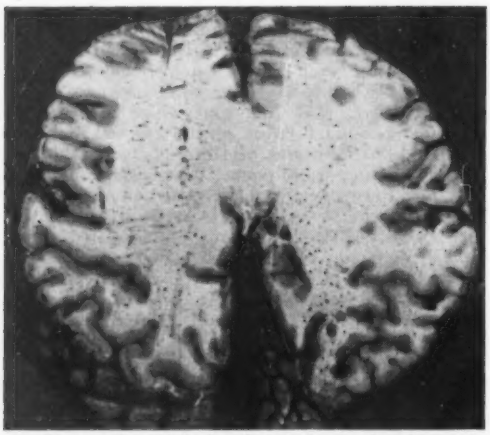


Fig. 1—Cross-section of brain of case 1, showing hæmorrhages in grey and in white matter.

Necropsy

Dr. J. F. Heggie reported bullous emphysema and acute suppurative inflammation of the entire bronchial tree, with occlusion of most of the bronchi by ropy mucopurulent discharge which, though tough, could be removed. There was hypertrophy of the right ventricle, sclerosis and atheroma of the pulmonary artery, and intense cerebral congestion, with hæmorrhages in the grey and the white matter (fig. 1).

2. *Epistaxis, Hæmatemesis, and Hæmorrhage into Lung in Severely Anoxic Emphysematous Patient*

A man, aged 38, first seen in December, 1953, had had bronchitis since childhood, with increasing dyspnœa for seven years. Work as a milk roundsman had been impossible for two years because of the dyspnœa. Two weeks after surgical removal of a large emphysematous bulla from the upper lobe of his left lung in August, 1953, he developed cardiac failure for the first time.

Condition on Admission

When admitted to Chase Farm Hospital he was semicomatose, with cyanosis and severe congestive cardiac failure. A gallop rhythm was heard in his epigastrium. Examination of his lungs revealed very poor basal air-entry but surprisingly good air-entry in the upper zones, little moisture, no bronchospasm, and no consolidation. The venous pressure in his neck was not raised; his pulse-rate was 86 and his blood-pressure 120/80 mm. Hg, and he had twitching of the fingers. Red blood-cells 7,400,000 per c.mm.; Hb 19·0 g. per 100 ml.

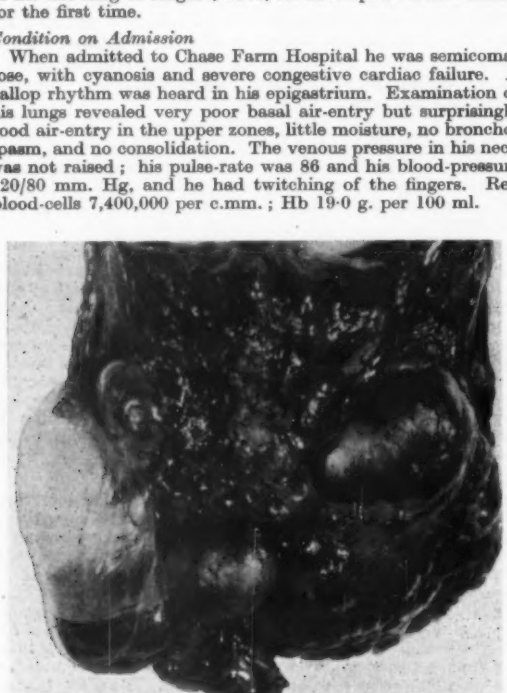


Fig. 2—Free blood in large bullæ of right lung of case 2 (prothrombin activity was 32% of normal).

Treatment and Course

Oxygen made him very drowsy. Thirteen days after admission he had several attacks of severe epistaxis and, later the same day, two large hæmatemeses. His hæmoglobin fell to 7·8 g. per 100 ml. and red cells to 2,700,000 per c.mm. Bleeding-time, clotting-time, and platelet-count were normal. The blood-urea level 36 mg. per 100 ml. Liver-function tests showed an indirect van den Bergh of 1 mg. per 100 ml., thymol turbidity 1 unit, and plasma-alkaline phosphatase 12·5 units per 100 ml. Prothrombin activity 32% of normal.

Over the next three days, he received 7 pints of blood with improvement in his general condition. Then he had a further hæmatemesis, and the hæmoglobin fell to 6 g. per 100 ml. He was transfused again and did not have any further hæmorrhages. The low prothrombin activity was shown by Dr. M. Lubran, of the West Middlesex Hospital, Isleworth, to be due to factor-VII deficiency in the plasma. Because of this the patient was given vitamin-K analogue 60 mg. daily by injection.

After nine days the prothrombin activity was 68% of normal, the indirect van den Bergh 1·3 mg. bilirubin per 100 ml., thymol turbidity 0·5 unit, and plasma-alkaline phosphatase 24 units. His alkali reserve was 56·5 m.eq. per litre. He had now been in hospital for twenty-five days and, although improved, he was disoriented at times. He died suddenly on the twenty-seventh day.

Necropsy

There was marked bullous emphysema of the right lung (the left lung showed generalised emphysema), the largest cyst being half-filled with blood (fig. 2). The pericardial sac contained free blood. An acute pyloric ulcer and three shallow ulcers at the lower end of the œsophagus were found. The liver (1320 g.) showed severe "nutmeg" change. The kidneys were normal. The right ventricle was much hypertrophied (180 g.), and the pulmonary artery showed sclerosis and atheroma.

3. *Azotæmia and Peripheral Circulatory Failure in Severely Anoxic Emphysematous Patient*

A man, aged 57, first seen in October, 1954, had chronic bronchitis. For six years he had found his work as a Civil Servant increasingly difficult because of dyspnœa. Two weeks before admission he had been falling asleep at his work, and on the day of admission his wife had found him "black and as cold as ice" in bed.

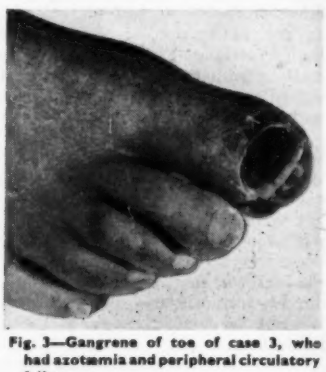


Fig. 3—Gangrene of toe of case 3, who had azotæmia and peripheral circulatory failure.

Condition on Admission

He was comatose, intensely cyanosed, and in a state of peripheral circulatory failure. A small area of gangrene subsequently developed on the inner side of the right great toe (fig. 3). His temperature was 97°F, pulse-rate 92, and blood-pressure 125/75 mm. Hg.

Treatment and Course

Antibiotics, oxygen, and nikethamide roused him, but he was disoriented. Because of retention of urine he was catheterised for two days following admission. He was incontinent for a further six days, but after this he passed urine normally. His prostate gland was firm and moderately enlarged. His blood-urea level on admission was 224 mg. per 100 ml., and his urine contained a moderate amount of albumin. Sacral œdema became evident two days after admission. His general condition improved remarkably; after a month he could demonstrate his maximum breathing capacity.

Eleven days before he died (fifty-seven days after admission) he became ill suddenly because of a chest infection (oxygen saturation 44%). Cardiac failure supervened, his mental state deteriorated, and he refused all treatment. His blood-urea levels and arterial oxygen saturation are shown in fig. 4.

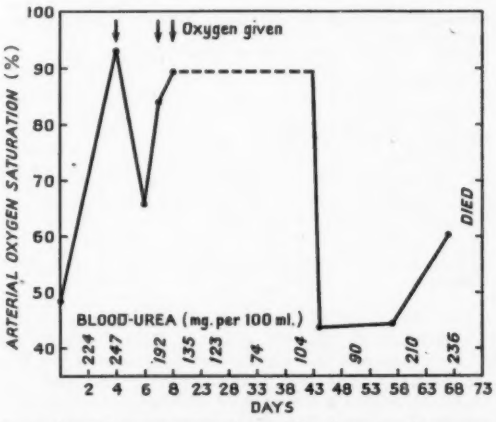

Oxygen given
ARTERIAL OXYGEN SATURATION (%)
BLOOD-UREA (mg. per 100 ml.)
224 247 192 135 123 74 104 90 210 236
DIED
2 4 6 8 23 28 33 38 43 48 53 58 63 68 73
DAYS

Fig. 4—Arterial oxygen saturation and blood-urea levels in case 3.

4. *Hypercapnia with Mental Clarity; Oxygen Addiction*

A man, aged 37 when first seen in July, 1954, had had winter bronchitis for seven years, before which he used to play football. Employed as a laundry salesman he was given an inside job because of increasing dyspnœa, but by January, 1954, even this work was too much for him.

Condition on Admission

He was admitted because of a respiratory infection (oxygen saturation 39%), but clinical examination of the lungs showed nothing remarkable. There was no evidence of heart-failure, although he said that his ankles had been swollen three times since January, 1954. Radiography of his chest showed an increase in translucency of the lungs, with probably a large bulla in the left mid-zone compressing the upper lobe; the outline of his heart was normal.

Treatment and Course

Operation was refused. Oxygen, given by nasal catheter intermittently at low rates of flow, relieved the dyspnœa, but by September he was using oxygen continuously throughout the day at an increased rate of flow and occasionally at night. By October and November he was having 8 litres a minute day and night. It was felt that this was unnecessary, and on Nov. 9 he was taken off oxygen. In minutes his condition was desperate and his colour black (oxygen saturation 38%). He took some time to recover after administration of oxygen was resumed.

Thereafter he had oxygen continuously by nasal catheter at a rate of at least 8 litres a minute (fig. 5). During the whole period of oxygen therapy his mental state was clear. After he had been in hospital a year his condition suddenly and unexpectedly deteriorated and he died. Necropsy was refused.

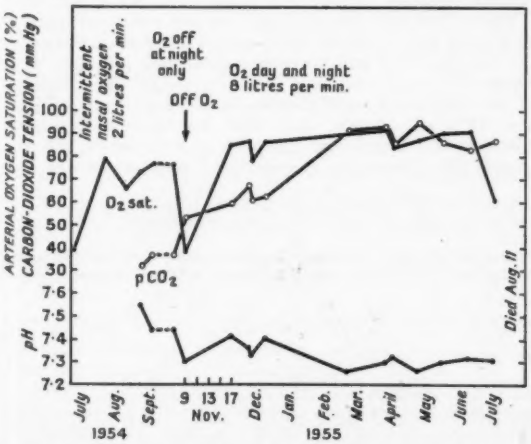

ARTERIAL OXYGEN SATURATION (%)
CARBON-DIOXIDE TENSION (mm.Hg)
pH
Intermittent nasal oxygen 2 litres per min.
O2 off at night only
O2 day and night 8 litres per min.
OFF O2
O2 sat.
pCO2
Died Aug. 11
July Aug. Sept. 9 13 17 Nov. Dec. Jan. Feb. Mar. April May June July
1954
1955

Fig. 5—Serial blood-gas analyses in case 4 (chart is magnified from Nov. 9 to Nov. 17).

Discussion

NERVOUS SYSTEM

Neurological Effects—Psychological

The psychological effects of anoxia have been described by Haldane (1919) and McFarland (1938), and these descriptions could equally well be applied to the mental state of the acutely anoxic emphysematous patient (Simpson 1954). Similar disturbances may occur in carbon-monoxide asphyxia (Drinker 1938, Killick 1940).

It is not surprising that profound psychological changes take place as a result of anoxia, since the cerebral cells are very susceptible to lack of oxygen. The macroscopic changes resulting from anoxia in the human brain, as well as in laboratory animals, consist of hyperæmia, congestion, and focal hæmorrhages in the grey and the white matter (Lucas 1946, Courville 1953). These changes are clearly illustrated in fig. 1, which is a photograph of a horizontal section of the brain of case 1—the patient who showed psychopathic tendencies.

A female outpatient, aged 58, who has severe emphysema and whose arterial oxygen saturation in the past year has varied between 89% and 79% (the present value), has developed a persecution complex. Her arterial carbon-dioxide tension has never been higher than 47 mm. Hg, and, although it is possible that the psychological changes have resulted from the severe and chronic anoxia, this is the only occasion on which I have found them in the absence of a respiratory infection.

Relationship between Mental State and Acidæmia, Hypercapnia, and Anoxia

When the emphysematous patient becomes severely anoxic as a result of a respiratory infection, the arterial blood may show, besides a low oxygen saturation, a decrease in pH and an increase in carbon-dioxide tension. Table I is compiled from observations made on admission to hospital of 61 emphysematous patients with acute respiratory infection. The more severe mental disturbances appear to be associated with a lower arterial oxygen saturation and pH rather than with an alteration in the arterial carbon-dioxide tension. In addition, since the carbon-dioxide tension did not rise above 80 mm. Hg, it is unlikely that hypercapnia played an important part in producing the mental changes (Westlake et al. 1955).

Drowsiness due to anoxia may not infrequently be the presenting symptom of a chest infection in the emphysematous patient. This is important because other signs of a respiratory infection may be absent: the temperature may be normal; there may be no signs of localised disease on physical examination of the lungs; and the amount of sputum may not be increased, although its character may alter. Drowsiness therefore may point the way to energetic antibiotic therapy, which is so essential if success is to be achieved in treating respiratory infections in the emphysematous patient (Simpson 1954, Westlake 1955).

The mental state on admission to hospital of the emphysematous patient with a respiratory infection seems to have some bearing on the prognosis, as follows:

Mental state	*No.*	*Died*
Clear	96	19
Drowsy	19	12
Semicoma	13	11
Coma	4	2

Neurological Effects—Motor Phenomena

Muscular tremor and incoördination are seen in the anoxia of high altitudes (Armstrong 1952) and as a result of chronic carbon-monoxide poisoning (Mayers 1930, Beck 1936). Twitching of the fingers or of the arms, more conspicuous on voluntary movement, and muscular incoördination are common in the severely anoxic emphysematous patient; and it may warn the observer that the anoxia is more severe than at first thought. Table II records the occurrence of involuntary muscular

TABLE I—RELATIONSHIP BETWEEN MENTAL STATE AND BLOOD-GAS ANALYSIS IN 61 EMPHYSEMATOUS PATIENTS WITH ACUTE RESPIRATORY INFECTION

Mental state	Arterial blood													
	Oxygen saturation (%)						Carbon-dioxide tension * (mm. Hg)					pH *		
	30–39	40–49	50–59	60–69	70–79	80 or more	49	50–59	60–69	70–79	80 or more	7·2–7·29	7·3–7·39	7·4 or more
Clear or drowsy	2	6	10	16	11	6	8	25	12	3	0	2	38	8
Mentally disturbed ..	4	2	4	0	0	0	1	3	3	3	0	5	4	1

* Not determined n 3 patients.

movements in a chronically anoxic patient who had repeated anoxic episodes, and it is seen that, as the anoxia increased, so the movements tended to be more prominent, without there being any great change in the arterial carbon-dioxide tension. Motor phenomena also develop in carbon-dioxide narcosis (Westlake et al. 1955) but they are usually more severe than those seen in anoxia.

CARDIOVASCULAR SYSTEM

Anoxia always increases the heart-rate and often lowers the blood-pressure. Rarely, severe anoxia may precipitate peripheral circulatory failure, as in case 3, in which this led to gangrene of a great toe (fig. 3). Acute cardiac dilatation and congestive failure may result from the acute anoxia of a respiratory infection; both are reversible (Simpson 1954).

TABLE II—MUSCULAR TWITCHINGS ASSOCIATED WITH REPEATED EPISODES OF ACUTE ANOXIA IN CHRONICALLY ANOXIC AND HYPERCAPNIC MALE AGED 54

Date	Arterial blood			Motor phenomena
	pH	Carbon-dioxide tension (mm. Hg)	Oxygen saturation (%)	
Jan. 3, 1955 ..	7·41	50	83	Nil
Feb. 19, ,, ..	7·35	55	61·5	Mild
,, 23, ,, ..	7·28	62	60	Severe
,, 26, ,, ..	7·39	57	79	Mild
March 5, ,, ..	7·27	65	45	Severe
April 5, ,, ..	7·43	41	89	Nil

The effect of progressive anoxia on the heart and circulation has been studied in man and animals (Sands and DeGraff 1925, Wiggers 1941, Ershler et al. 1943). When the arterial oxygen saturation fell to 35–50%, corresponding to a height of 30,000 ft., a circulatory crisis developed. As the oxygen saturation of the anoxic emphysematous patient with an acute respiratory infection may be about the same value, it is not surprising that here too a circulatory crisis may arise. The blood-pressure and pulse-pressure fall alarmingly, and the jugular venous pressure becomes strikingly raised.

HÆMOPOIETIC SYSTEM

Mountaineers and those living at high altitudes have polycythæmia, a parallel increase in hæmoglobin, and an increase in the mean red-cell diameter, though there are big individual variations (Richards 1913, Dallwig et al. 1915, Smith et al. 1924–25, Hurtado 1932, Hurtado et al. 1945). Since there is a slight reticulocytosis in the blood (maximum 4%), it has been assumed that the blood changes represent a response of the bone-marrow to the stimulus of anoxia. This was confirmed when Merino and Reynafarje (1949) found that the bone-marrow contained some 56% of erythroid cells, against the normal 16%.

The blood changes in emphysema are surprisingly not the same as those obtaining at high altitude, although anoxia is common to both (Lemon 1929, Kaltreider et al. 1934, Hurtado et al. 1945). Wilson et al. (1951) found the following blood changes in 69 emphysematous patients: the mean corpuscular volume (M.C.V.) was usually increased; there was a significant negative correlation between the oxygen capacity and saturation; the number of reticulocytes and the serum-bilirubin level were normal; the bone-marrow showed a normal percentage of erythroid cells; and polycythæmia was rare and usually associated with severe anoxia and heart-failure.

The pH, carbon-dioxide tension, and oxygen saturation of arterial blood * were estimated in 193 emphysematous patients, of whom 61 were studied during an acute respiratory infection. In 101 the red-cell count and hæmatocrit were also measured. The results are set out in table III, and the correlation coefficients and standard errors are summarised in table IV.

In analysing the results it is important to separate the patients who have an acute respiratory infection from those who have not, because acute changes in the blood gases and blood-count due to the infection might not be maintained in the "resting state." For example, several patients had red-cell counts above 5,500,000 per c.mm. when acutely ill but below this figure on recovery.

Oxygen Capacity

Wilson et al. (1951) found in 69 emphysematous patients a highly significant negative correlation between oxygen capacity and oxygen saturation, although the degree of correlation was low (r = −0·32). My findings in 165 ambulant emphysematous patients were similar (r = −0·21, s.e. = 0·08); but with an acute respiratory infection the correlation disappeared (r = +0·06, n = 61, s.e. = 0·13). However, in individual patients recovering

* Copies of the hæmatological findings may be obtained from the author at Chase Farm Hospital, Enfield, Middlesex.

TABLE III—ARTERIAL CARBON-DIOXIDE TENSION, HÆMOGLOBIN, RED CELLS, AND BLOOD STANDARDS AT DIFFERENT LEVELS OF ARTERIAL OXYGEN SATURATION IN 38 ACUTELY ILL AND 63 AMBULANT EMPHYSEMATOUS PATIENTS

No. of patients	Arterial oxygen saturation (%)		Carbon-dioxide tension (mm. Hg)		Red cells (million per c.mm.)		Hæmoglobin (g. per 100 ml.)		P.C.V. (%)		M.C.H. (μμg.)		M.C.H.C. (%)	
	Mean	Range	Mean	Range	Mean	Range	Mean	Range	Mean	Range	Mean	Range	Mean	Range
27	92·8	90–98	42·0	31–50	4·9	3·7–5·5	14·0	11·3–16·3	46·0	35–54	29·0	24–33	31·0	26·0–33·5
37	85·0	80–89	45·2	30–58	5·1	4·2–6·4	14·4	11·3–17·8	48·1	38–38	28·5	22–33	30·2	26·5–33·0
12	75·0	70–79	56·9	43–67	5·3	4·1–7·5	15·3	11·2–18·9	53·0	41–64	27·5	28–33	29·0	25·0–32·0
13	65·6	60–69	59·0	45–78	5·2	4·0–6·0	15·0	12·6–17·2	53·0	46–65	29·5	25–38	29·0	27·0–33·0
12	50·6	33–59	61·7	48–68	5·5	4·4–6·6	14·4	11·4–17·8	54·3	42–66	26·3	19–30	26·7	22·0–32·0

TABLE IV—CORRELATION BETWEEN OXYGEN SATURATION, OXYGEN CAPACITY, CARBON-DIOXIDE TENSION, P.C.V., AND M.C.V. IN EMPHYSEMATOUS PATIENTS WHEN ACUTELY ILL AND WHEN AMBULANT

—		Acute respiratory infection			Ambulant (no acute respiratory infection)		
		No. of patients	r	s.e.	No. of patients	r	s.e.
Oxygen capacity (vol. %) and oxygen saturation (%)		61	+0·06	0·13	165	−0·21	0·08
P.C.V. (%)	Oxygen saturation %	38	−0·11	0·16	65	−0·47	0·125
	CO_2 tension (pCO_2) mm. Hg	37	+0·36	0·16	63	+0·50	0·13
M.C.V. (c.μ)	Oxygen saturation %	38	−0·04	0·16	63	−0·23	0·13
	CO_2 tension (pCO_2) mm. Hg	38	+0·33	0·16	63	+0·49	0·13

from the anoxia of a respiratory infection the oxygen capacity was a sensitive index of the oxygen saturation. A typical example is that shown in table V, which records the arterial oxygen saturation and capacity in an emphysematous woman, aged 57, recovering from bronchopneumonia. In only 3 of their 61 patients did Wilson et al. (1951) find an oxygen capacity of more than 24 vol. %, and all of these had severe anoxia and heart-failure. Ratto et al. (1955) found that the hæmoglobin rarely exceeded 16·5 g. per 100 ml. in their patients with chronic pulmonary disease. In the present series the oxygen capacity was above 24 vol. % in 8 patients, of whom 4 were in cardiac failure (see also Simpson 1954). Their arterial oxygen saturations were, with 1 exception (58%), within the range 70–89%.

Hæmatocrit and Mean Corpuscular Volume

It is convenient to discuss the hæmatocrit (P.C.V.) and the M.C.V. together because the latter is calculated by dividing the former by the red-cell count. It will be seen from table IV that the P.C.V. and the M.C.V. are significantly correlated with both the oxygen saturation and the carbon-dioxide tension in the ambulant emphysema-

TABLE V—ARTERIAL OXYGEN SATURATION AND OXYGEN CAPACITY IN AN EMPHYSEMATOUS WOMAN, AGED 57, RECOVERING FROM BRONCHOPNEUMONIA

Date 1955	Arterial oxygen saturation (%)	Oxygen capacity (vol. %)
Nov. 7..	59	18·7
,, 9..	67	16·8
,, 11..	56	19·5
,, 12..	64	19·1
,, 14..	81	17·7
,, 22..	76	17·8
Dec. 7..	88	16·4

tous group. In the acutely ill group, however, the correlation with the oxygen saturation is lost, whereas that with the carbon-dioxide tension is maintained. These findings suggest that the M.C.V. and the related P.C.V. are determined more by the carbon-dioxide tension than by the oxygen saturation of the arterial blood (see also table X). Price-Jones (1921) felt that the large M.C.V. in emphysema was linked to the arterial carbon-dioxide tension.

Mean Corpuscular Hæmoglobin Content and Mean Corpuscular Hæmoglobin Concentration

The normal mean corpuscular Hb content (M.C.H.) is 27–32 μμg. and the normal mean corpuscular hæmoglobin concentration (M.C.H.C.) 32–38%. The findings in my cases recorded in table VII suggest that, although the average amount of hæmoglobin per cell may be normal, the concentration in each red cell is reduced both in the ambulant and in the acutely ill emphysematous patient, especially the latter. As has been shown previously, the M.C.V. tends to be large in the ambulant emphysematous patient and significantly larger when such patients are acutely ill and therefore anoxic. The reduction in the M.C.H.C. may result partly from the increased size of the red cells.

Table III shows that, as the anoxia increases, so the M.C.H.C. tends to decrease. Hurtado et al. (1945) thought that interference with the formation of Hb might be responsible for the decrease in M.C.H.C. Brinton (1951), investigating the polycythæmia of cyanotic congenital heart-disease, found that in half the cases the M.C.H.C. was less than 30%.

Red-cell Count

Different observers have recorded different red-cell counts at the same altitude; but if we take the figures of Hurtado et al. (1945) natives of the Andes have a red-cell count of 5·67±0·04 million per c.mm. when their arterial oxygen saturation is 87·6%, and a count of 6·15±0·07 million when the saturation is 81·4%. If these oxygen-saturation levels are applied to chronically anoxic emphysematous patients, a red-cell count of more than

TABLE VI—ARTERIAL BLOOD-GASES AND BLOOD-COUNTS IN 15 ANOXIC EMPHYSEMATOUS PATIENTS WHOSE ARTERIAL OXYGEN SATURATION WAS BELOW 80%

Oxygen saturation (%)		Carbon-dioxide tension (mm. Hg)	Red cells (million per c.mm.)	Hb (g. per 100 ml.)
	Range			
79	79–88	57	4·4	13·9
79	79–82	50	5·1	16·0
77	65–77	63	7·5	18·8
75	63–80	56	5·1	12·6
66	66–81	68	6·0	17·1
67	66–82	57	5·2	14·2
77	76–90·5	57	4·7	16·6
77	77–85	55·5	5·3	14·7
78	78–90	43	5·5	13·5
76	76–84	49	5·5	14·6
79	79–87	45	5·0	13·6
76·5	76·5–89	49	6·4	17·3
76	76–85	51	5·4	16·3
76	76–90	47	5·2	14·0
74	74–89	53	5·2	15·7

6 million would be expected in about a quarter of them (table VIII). However, Hecht and Samuels (1952), who studied 21 emphysematous patients of whom 18 had cor pulmonale, concluded that the onset of polycythæmia secondary to lung disease took place at an oxygen tension of about 35 mm. Hg (60% saturation) in arterial blood and about 25 mm. Hg in venous blood in the bone-marrow.

Clinical Observations

In my 165 chronically anoxic patients a red-cell count of over 6 million was found on only 5 occasions, in which the arterial oxygen saturation was 84%, 66%, 77%, 89%, and 85%. Of 39 patients acutely ill from a respiratory infection 3 had red-cell counts of over 6 million, their arterial oxygen saturation being 68%, 58%, and 87%. The incidence of polycythæmia, therefore, in both

TABLE VII—MEAN CORPUSCULAR HÆMOGLOBIN CONTENT AND MEAN CORPUSCULAR HÆMOGLOBIN CONCENTRATION IN ACUTELY ILL AND AMBULANT (LESS ANOXIC) EMPHYSEMATOUS PATIENTS

State	No. of patients	Oxygen saturation (%)		M.C.H. (μμg.)		M.C.H.C. (%)	
		Mean	Range	Mean	Range	Mean	Range
With acute respiratory infection ..	38	66	33–89	28·4	19–38	28·5	22–33
Without acute respiratory infection	63	88	66–98	28·8	24–33	30·4	25–33

TABLE VIII—CHRONICALLY ANOXIC EMPHYSEMATOUS PATIENTS GROUPED ACCORDING TO ARTERIAL OXYGEN SATURATION

Series	No. of patients	Arterial oxygen saturation (%)			
		90 +	85–90	80–85	Less than 80
Wilson et al. (1951)	69	26	21	4	18
Ratto et al. (1955)	114	71	29	..	14
Present	165	87	42	26	10

the ambulant and in the acutely ill emphysematous patient is unexpectedly low. What is more surprising is that 27 of 63 ambulant patients had red-cell counts below 5 million, 12 having them below 4·5 million.

When the anoxic emphysematous patient is subjected to further anoxia by an acute respiratory infection, the red-cell count, hæmoglobin, and P.C.V. increase immediately because of a diminution in plasma volume (fig. 6). The reticulocyte-count increases, and the M.C.H.C. decreases. This deficiency may be repaired by the administration of iron either by injection or by mouth (table IX). The progressive decrease in oxygen capacity and in red-cell count in case 4 (table X) might have been because the constant administration of oxygen either removed the stimulus necessary for the normal function of the bone-marrow (Moore et al. 1944) or caused persistent hypercapnia (Ratto et al. 1955). Some experimental evidence suggests that anoxia influences the bone-marrow indirectly through a humoral mechanism (Eralev 1955).

Why is Polycythæmia Infrequent in Emphysema?

Lawrence (1955) makes the interesting observation that 14 of his 159 patients with polycythæmia vera had a red-cell count below 5·5 million per c.mm. but an increased total red-cell mass. Is it possible that the anoxic emphysematous patient has an increased red-cell mass but no polycythæmia? This does not seem likely, since the oxygen-carrying capacity of the blood would not thereby be increased.

Ratto et al. (1955) say that the hæmoglobin of the anoxic emphysematous patient rarely exceeds 16·5 g. per 100 ml. They point out that chronic pulmonary disease with anoxia and secondary polycythæmia is often found in the same age-group as is polycythæmia vera, and say that, on clinical grounds alone, if venous arterial shunt has been excluded, the diagnosis of polycythæmia vera is likely in any patient who has a hæmatocrit greater than 60% and a hæmoglobin which exceeds 17 g. per 100 ml.

Severe anoxia inhibits bone-marrow.—Hurtado et al. (1945) found that, when the oxygen saturation of the arterial blood falls below 70%, there is a decrease in the hæmoglobin, the P.C.V., and the M.C.V. Such chronic levels of oxygen saturation are uncommon (table VIII), and it is mainly during the acute anoxic episodes from chest infections that the oxygen saturation falls below 70%.

Raised carbon-dioxide tension in arterial blood.—The raised arterial carbon-dioxide tension which often accompanies the anoxia has been suggested as a possible cause of the lack of polycythæmia in the emphysematous patient (Ratto et al. 1955). In 12 patients (including 5 of the present series) who had a red-cell count of over 6 million per c.mm. the carbon-dioxide tension was higher than 55 mm. Hg in 5 and below that level in 7. The patient with the highest red-cell count of 7·5 million had a carbon-dioxide tension of 63 mm. Hg for at least two years before he died.

Chronic pulmonary infection.—The lack of polycythæmia has been attributed to chronic pulmonary infection (Wilson et al. 1951), and Cartwright and Wintrobe (1955) say that the "anæmia of infection" can develop in chronic illnesses as diverse as brucellosis and empyema. 4 male emphysematous patients had their plasma-iron levels estimated before, after, and during an acute respiratory infection. In each instance the plasma-iron level, although normal before the infection, fell to low levels (17–42 μg. per 100 ml.) during the infection but rose to normal on recovery. Possibly the emphysematous patient may have the "anæmia of infection" when he has an acute chest infection but whether or not it could be responsible for the lack of polycythæmia in those who are anoxic and apyrexial but constantly expectorating purulent sputum is uncertain. The chronically and severely anoxic patient's intake of food always diminishes, and this would put an additional strain on the metabolism of iron. Both these factors might limit the degree of polycythæmia.

TABLE IX—ARTERIAL BLOOD-GAS ANALYSES, RED-CELL COUNTS, AND BLOOD STANDARDS IN A CHRONICALLY ANOXIC EMPHYSEMATOUS MALE, AGED 54, AS OUTPATIENT AND AS INPATIENT WITH SEVERE ANOXIA DUE TO PNEUMONIA

Date 1955	pH	Carbon-dioxide tension (mm. Hg)	Oxygen saturation (%)	Oxygen capacity (vol. %)	Red cells (million per c.mm.)	Hb (g. per 100 ml.)	P.C.V. (%)	M.C.V. (c.μ)	M.C.H. (μμg.)	M.C.H.C. (%)	Reticulocytes (%)
Outpatient:											
Nov. 16	7·36	56	75·0	16·9	5·1	12·6	50·0	98·0	25·0	25·0	..
,, 24	..	..	..	..	5·1	11·5	50·5	99·0	22·5	23·0	..
Intramuscular iron 250 mg. daily from Nov. 25 to Dec. 5											
Inpatient:											
Nov. 30	7·36	57	50·5	14·5	5·6	10·7	49·5	89·0	19·0	22·0	3
Dec. 5	..	..	..	..	5·7	12·7	52·5	92·0	22·5	24·5	..
,, 16	7·29	60	46·0	17·5	5·7	12·9	53·0	93·0	23·0	24·5	..
,, 21	7·34	58	63·0	18·4	5·9	13·5	54·0	91·5	23·0	25·0	..

Loss of blood.—Spontaneous hæmorrhage is sometimes seen in emphysematous patients who are severely anoxic as a result of a respiratory infection. It is therefore possible that occult bleeding may contribute to the normal or the reduced red-cell counts in the anoxic emphysematous patient. The suggested increased incidence of peptic ulcer in chronic lung disease might be an additional factor in the occult bleeding (Weber and Gregg 1955, Latts et al. 1956).

Variability in severity of anoxia.—Not only is polycythæmia infrequent in the emphysematous patient but the raised red-cell count in some of those who are chronically anoxic rarely reaches the levels found in normal people at comparable altitudes. The reason for this difference may be that the anoxia of high altitudes is constant, whereas that of the emphysematous patient varies, even in those who are severely anoxic. Table VI shows the analyses of arterial blood and the blood-counts

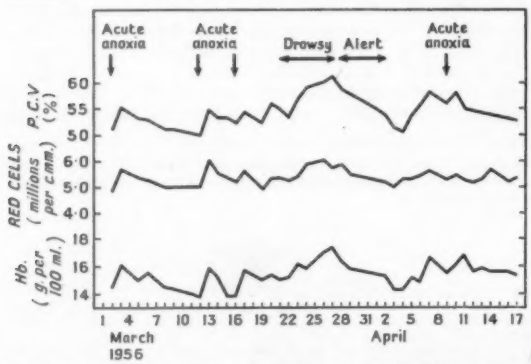


Fig. 6—Hæmopoietic response to episodes of acute anoxia in emphysematous male, aged 54, who was chronically anoxic and hypercapnic.

TABLE X—ARTERIAL BLOOD-GAS ANALYSES, RED-CELL COUNTS, AND BLOOD STANDARDS IN CASE 4 RECEIVING CONTINUOUS OXYGEN AFTER RECOVERY FROM RESPIRATORY INFECTION

Date	pH	Carbon-dioxide tension (mm. Hg)	Oxygen saturation (%)	Oxygen capacity (vol. %)	Red cells (million per c.mm.)	Hb (g. per 100 ml.)	P.C.V. (%)	M.C.V. (c.μ)	M.C.H. (μμg.)	M.C.H.C. (%)
July 7, 1954	..	..	39	25·0	5·6	17·9	56	100	32	32
Sept. 16, ,,	7·44	37	77	22·2	..	..	..	..	..	..
Dec. 9, ,,	7·36	68	86	19·8	..	..	..	..	..	..
March 5, 1955	7·26	91	90	16·9	..	..	..	..	..	..
May 26, ,,	7·30	86	90	17·3	3·3	12·6	42	127	38	30
July 28, ,,	7·31	86	61	14·9	Died Aug. 11, 1955					

of 15 chronically anoxic patients (oxygen saturation 80% or less), of whom 7 are included in the present series. The range of arterial oxygen saturation is the largest fluctuation observed within a year of the single determination. It is seen that the highest red-cell count was in the only patient whose oxygen saturation never exceeded 77%. Since the maximal oxygen saturation was often 85% or higher, it is not so surprising that polycythæmia was not observed so often as one would have expected from the single arterial determination of oxygen. Fishman et al. (1955) reported similar variations in the arterial oxygen saturation of 7 patients with chronic pulmonary emphysema and retention of carbon dioxide. The work of Hecht and Samuels (1952) also suggests that the reason for the lack of polycythæmia is that the anoxia is not severe enough. Blood-counts done over a period of two years in a woman, aged 48, with severe emphysema tend to support this view.

From May, 1955, to January, 1956, the arterial oxygen saturation was 90%, the oxygen capacity 17·1–18·4 vol. %, the red-cell count 5 million, and the P.C.V. 46%. In July, 1956, the arterial oxygen saturation had fallen to 78%, the red-cell count had risen to 5·5 million, and the oxygen capacity and P.C.V. remained at 18·2 vol. % and 45·5% respectively. In January, 1957, the arterial oxygen saturation was 79·5% as before, but the red-cell count had risen to 5·8 million, the oxygen capacity to 24·2 vol. %, and the P.C.V. to 53%.

Nevertheless, there are chronically anoxic patients who are not so polycythæmic as one would expect from their arterial oxygen saturations.

It is worth noting that the cyanotic colour of the emphysematous patient may be such that the anæmia is overlooked.

THE LIVER

McMichael (1937) pointed out that, because of the admixture of hepatic and portal blood at the periphery of the lobule, the liver-cells are normally supplied with oxygen at a tension lower than that of the oxygen supplied to the cells of other organs, and that therefore in anoxia the liver-cells would be more likely to suffer. In airmen who died accidentally from the effects of high-altitude flying vacuoles were found in the liver-cells (Kritzler 1944, Lewis and Haymaker 1948).

Histological examination of the liver of emphysematous patients dying as a result of an acute chest infection has not shown vacuolation of the liver-cells, but 10 of the 61 patients reported here bled unexpectedly when they were ill and anoxic. The pertinent data relative to the bleeding episodes are given in table XI. Patient 10, the only survivor, had a brisk hæmorrhage per rectum of about 2 pints of bright red blood from an unknown source; 4 of the patients had a red-cell count of more than 6 million per c.mm.; and congestive heart-failure was present in 8, being of long standing in only 2.

In addition to these patients who bled spontaneously, the prothrombin activity was measured in 56 other patients with emphysema and an acute respiratory infection. In 26 it was reduced (table XII), but none had a spontaneous hæmorrhage, although bruising was common. One chronically anoxic patient (oxygen saturation 78%), however, had a severe hæmorrhage after a dental extraction. Waring and Yegge (1933) reported that an anoxic and polycythæmic lumberjack bled profusely after tonsillectomy.

TABLE XII—REDUCED PROTHROMBIN ACTIVITY IN 26 OF 56 PATIENTS WITH EMPHYSEMA AND ACUTE RESPIRATORY INFECTION

Prothrombin activity (% of normal)	No. of patients
70 +	8
60–69	8
50–59	7
40–49	1
30–39	2

The plasma of 7 of the 26 patients was examined to determine the cause of the reduced prothrombin activity. In every instance it was found to be due to a deficiency of factor VII, which was not of congenital origin (Owren 1947). The prothrombin activity of 72 ambulant emphysematous patients has been found to be normal in every case.

Liver damage may result from the combined effect of venous congestion and anoxia. Of the 26 patients who had a reduced prothrombin activity, 13 were in congestive cardiac failure and 12 had an arterial oxygen saturation less than 70%. The prothrombin activity was measured in 7 patients with chronic congestive cardiac failure due to rheumatic heart-disease and in 16 patients who had

TABLE XI—DATA RELATING TO UNEXPECTED HÆMORRHAGES IN SEVERE ANOXIA

Patient no.	Dyspepsia	Arterial oxygen saturation (%)	Cardiac failure	Source of bleeding				Prothrombin activity (% of normal)	Blood-count		Necropsy findings
				Nose	Hæmatemesis	Altered blood in stomach	Rectum		Red cells (million per c.mm.)	Hb (g. per 100 ml.)	
1	Doubtful	..	+	+	+	..	..	32	7·4	19·0	Hæmorrhage into pericardium and bullæ of lung, acute ulcers of œsophagus and pylorus
2	Doubtful	69	+	..	+	..	..	..	6·4	18·4	Acute gastric erosions
3	Absent	58	+	..	..	..	+	58	6·6	18·4	Chronic duodenal ulcer
4	Present	..	0	..	..	..	+	68	4·7	14·3	Chronic gastric ulcer, mitral stenosis, cerebral infarctions
5	Absent	..	+	..	..	+	..	..	5·4	16·3	No focal lesions
6	Doubtful	36	0	..	..	+	..	..	5·0	16·0	No focal lesions
7	Absent	52	+	..	..	+	..	..	5·5	16·9	Two acute duodenal ulcers, one almost perforated
8	Absent	52	0	..	..	+	..	70	5·1	13·2	Atrophic gastritis
9	Absent	50	0	+	..	+	..	58	5·1	16·3	Acute gastric erosions
10	Absent	45	+	..	..	..	+	70	5·2	15·5	(Sole survivor)

various diseases unrelated to the respiratory and cardiac systems. In all the prothrombin activity was normal.

In 10 patients the reduced prothrombin activity returned to normal as the anoxia improved, and in 1 of them a return of the respiratory infection (oxygen saturation 64%) was associated with a fall in the prothrombin activity to its previous level (58%). The prothrombin activity of the blood of 4 acutely anoxic patients, in whom previously it was normal, fell before death. 4 emphysematous patients in chronic congestive failure, whose arterial oxygen saturations were 62%, 77%, 75%, and 65%, have prothrombin activity times which have repeatedly measured 50%, 85%, 75% and 85%.

The liver-function tests were abnormal in case 2, but similar tests done on 3 patients whose prothrombin activities were reduced to 38%, 58% and 69% were normal.

Necropsy Findings

The liver of the anoxic emphysematous patient always shows "nutmeg" changes. Histologically Dr. J. L. Hamilton-Paterson found, in all sections, chronic venous congestion ranging from mild and apparently reversible to severe cardiac cirrhosis. The greatest changes were in the livers of 2 patients who were in a state of congestive heart-failure when the acute anoxic episode occurred. Their prothrombin activities were the lowest in the series—32% and 50%.

Fulton (1953), reporting on 50 patients with chronic lung disease and cardiac involvement, says that 2, in the terminal stages of the disease, died from a sudden hæmatemesis. Both had a previous history of peptic ulceration. He also states that peptic ulceration was found at necropsy in 9 cases and that, except in 1 case, the ulceration was recent and unsuspected during life. These findings are similar to mine.

There is some evidence that, under the severe stress of anoxia, gastro-intestinal ulceration may result (Selye 1946). Peptic ulceration may be more common in the patient who also has chronic lung disease (Weber and Gregg 1955, Latts et al. 1956). Of the 61 patients in the present series who were admitted to hospital because of an acute respiratory infection, 8 gave a history of indigestion; the barium meal was positive in 4 (2 duodenal and 2 gastric ulcer) and negative in 2, and of the 2 others, who were not radiographed, a chronic gastric ulcer was found in 1 at necropsy.

Doig and Shafar (1956) report hæmatemesis complicating cerebrovascular accidents, but this is not found in the anoxic emphysematous, although their brains may contain hæmorrhages in the grey and the white matter.

Koller (1956) says that a decrease in factor VII is a sensitive index of hepatocellular damage.

The reduced level of prothrombin activity would not, by itself, cause the spontaneous bleeding, but perhaps the added effect of the anoxia on the capillary permeability (Landis 1934) made it possible. The bruising often seen over the pressure points in these anoxic patients lends weight to this view.

THE KIDNEYS

In a review of azotæmia in gastroduodenal hæmorrhage Black (1942) concludes that the rise of the blood-urea level is due to tissue anoxia causing not only functional renal impairment but also an increased load on the kidneys as a result of the increased breakdown of protein (Brünquist et al. 1925). Waring and Yegge (1933) said that their lumberjack with emphysema and polycythæmia had albuminuria and at necropsy the kidneys revealed histological changes similar to those of subacute glomerulonephritis.

When an emphysematous patient is made severely anoxic by a chest infection, the two factors necessary to produce azotæmia—tissue anoxia and low blood-pressure—are present (Black 1942). It is not surprising that I have seen 17 such cases. Other findings which are strikingly similar to Black's (1942) are that albuminuria is not uncommon; that the blood-urea rises rapidly and is usually only moderately raised; that the azotæmia is reversible; that the blood-urea rises terminally; and that the kidneys at necropsy are macroscopically and microscopically unaffected. Case 3 shows that azotæmia may take place under the stress of severe anoxia (details of the events are shown in fig. 4). The blood-urea level was determined in 44 emphysematous patients who were anoxic from a respiratory infection: it was moderately raised in 19, of whom 8 died, 7 were in cardiac failure, and 8 had an arterial oxygen saturation of less than 60%.

Necropsy Findings

The kidneys of the anoxic emphysematous are always congested, but their architecture is macroscopically unaltered.

Dr. Hamilton-Paterson has summarised the histological findings in 8 patients, including case 3, who were azotæmic as follows. All the sections showed congestion, and where this was severe, medullary hæmorrhages tended to occur. With increasing severity of the congestion there was œdema and fibrosis in the medulla. There were no glomerular changes attributable to the anoxia. In the 3 cases in which glomerular changes were seen they were the result of benign hypertension (observed during life in 2 patients and inferred in the other 1 from a necropsy finding of left ventricular hypertrophy in the absence of coronary atheroma). All the sections showed tubular changes due to autolysis.

OXYGEN THERAPY

When the emphysematous have a chest infection, the resulting anoxia stimulates the respiratory centre—unless it is too severe, in which case it depresses the respiratory centre. If oxygen is given to such a patient, the anoxic drive to increased respiration is removed, the minute volume of respiration decreases, and carbon dioxide accumulates in the blood. Subsequent alteration in the pH of the blood will depend on the speed with which the carbon dioxide accumulates. If it does so rapidly, as when the anoxic drive to respiration is completely removed by inhaling high concentrations of oxygen, the pH decreases considerably. If the oxygen is given in less concentration to preserve some of the anoxic drive, the lowering of the pH will be less.

Barach (1950) suggested that the acidæmia was more important than the hypercapnia in determining this ill effect of oxygen therapy. If this is so, the administration of gradually increasing concentrations of oxygen would cause less mental disturbance, because the increase of carbon dioxide in the arterial blood (and with it the lowering of the pH) would be gradual and there would be time for compensation to take place.

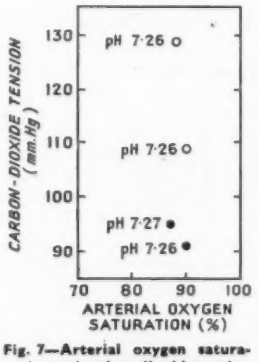


Fig. 7—Arterial oxygen saturation and carbon-dioxide tension of two mentally clear emphysematous patients on continuous oxygen therapy.

The effects of change in the pH and carbon dioxide cannot be isolated and studied separately. However, chronically anoxic patients who have a chest infection and who are treated with oxygen may go into a state of relatively chronic respiratory failure with marked hypercapnia but with a compensated or nearly compensated acidosis. Fig. 7 records such a sequence of events in 2 patients who, while receiving oxygen, did not suffer any mental change beyond drowsiness. It is therefore evident

TABLE XIII—OXYGEN THERAPY CAUSING CARBON-DIOXIDE NARCOSIS AND COMA FOLLOWED BY RECOVERY

Before oxygen therapy				After oxygen therapy			
pH	Carbon-dioxide tension (mm. Hg)	Oxygen saturation (%)	Mental state	pH	Carbon-dioxide tension (mm. Hg)	Oxygen saturation (%)	Mental state
7·27	65	45	Drowsy	7·17	95	93	Coma
7·22	78	64	Drowsy	7·13	104	96	Coma
7·24	60	34	Irrational	7·14	94	84	Coma

that severe hypercapnia is compatible with a normal mental state, provided the pH is not suddenly or greatly decreased (see also fig. 5).

Even if coma does follow on oxygen therapy in the anoxic emphysematous it is not necessarily fatal (table XIII).

A further and very rare danger of oxygen therapy is dependence on oxygen. Case 4 is an example—the only one I have seen—and fig. 7 records the serial blood analyses over a year. Since the patient coped without oxygen before, and later had alarming withdrawal symptoms, I think that he can be said to have had oxygen addiction.

Summary

The effect of acute and chronic anoxia on the body was studied in the emphysematous.

Besides its better-known effects on the central nervous, cardiac, respiratory, and hæmopoietic systems, acute anoxia can cause functional renal and hepatic failure, which are reversible if the anoxia is relieved.

If the anoxia is severe or unrelieved, irreversible and histologically demonstrable changes may take place in the structure of the liver but not in that of the kidneys. The functional renal failure is shown by azotæmia, and that of the liver by a reduction in factor VII in the plasma. The measurement of the blood-urea level and of prothrombin activity are therefore additional laboratory aids in estimating the severity of the effects of anoxia.

The spontaneous bleedings which may occur—usually terminally—in the severely anoxic emphysematous probably arise from the anoxia not only acting as a severe stress and causing acute peptic ulceration but also damaging the liver and capillaries. The hæmorrhage from the nose, into the internal organs, and following dental extraction in those patients whose prothrombin activity is only moderately reduced might be explained by the concomitant damage to the capillaries by anoxia.

The usual blood changes in the anoxic emphysematous are an increase in the mean corpuscular volume and hæmatocrit which seem to be related more to changes in carbon-dioxide tension than to oxygen saturation. It has been said that polycythæmia is uncommon in the anoxic emphysematous in comparison with healthy persons living at a high altitude, given the same degree of oxygen unsaturation; but the comparison may be invalid because, whereas the anoxia is constant at high altitude, in the emphysematous it may fluctuate, and the fluctuations may raise the arterial oxygen saturation so high that polycythæmia cannot be expected. However, this is only a partial explanation because, even when polycythæmia does develop, it is less than one would expect at a comparable altitude. The combined effects of chronic lung sepsis, deficient intake of iron, occult blood-loss, inhibition of the bone-marrow or of a humoral factor by severe anoxia, and interference with the formation of hæmoglobin by anoxia may all, at one time or another, contribute to the reduced hæmopoietic response. Indeed, iron-deficiency anæmias are not uncommon, and every patient with chronic anoxia should receive iron, especially during an acute anoxic episode.

The administration of oxygen for the relief of anoxia, especially if severe, in the acutely ill emphysematous can be dangerous. The danger arises from the combined effects of hypercapnia and acidæmia. A slow rate of oxygen flow allows compensation to take place which avoids or minimises the effects of carbon-dioxide narcosis. It is emphasised that coma resulting from oxygen therapy is not necessarily fatal. An example is given of a further rare danger of oxygen therapy—i.e., oxygen addiction.

Severe anoxia, if unrelieved, can cause irreversible changes in most of the human organs, and it is our duty, exercising due caution, to relieve it whenever possible. Whereas the ill effects of carbon-dioxide narcosis may be reversible, those of unrelieved anoxia are not.

My thanks are due to my colleague, Dr. C. Allan Birch, for allowing me free access to his patients; to my technician, Miss Joyce Gardiner, for her invaluable work; to Dr. J. T. Prendiville for the necropsy reports; and to Miss M. Clark for her clerical assistance. I am grateful, too, to Prof. R. V. Christie and Dr. F. J. Prime for their criticism. The photography was undertaken by Mr. F. H. Knight of Chase Farm Hospital. I want also to acknowledge my special indebtedness to Van Liere's book on anoxia.

This work was completed with the help of a grant from the Medical Research Council.

REFERENCES

Armstrong, H. G. (1952) Principles & Practice of Aviation Medicine. 3rd ed., London.
Barach, A. L. (1950) *J. Amer. med. Ass.* **143**, 1047.
Beck, H. G. (1936) *Ibid*, **107**, 1025.
Biggs, R., Macfarlane, R. G. (1953) Human Blood Coagulation and Its Disorders. Oxford.
Black, D. A. K. (1942) *Quart. J. Med.* **11**, 77.
Brinton, W. D. (1951) *Guy's Hosp. Rep.* **100**, 148, 185.
Brünquist, E. H., Schneller, E. J., Loevenhart, A. S. (1925) *J. biol. Chem.* **62**, 93.
Cartwright, G. E., Wintrobe, M. M. (1955) *In* Wilkinson, J. F. Modern Trends in Blood Diseases. London.
Comroe, J. H., Bahnson, E. R., Coates, E. O. jun. (1950) *J. Amer. med. Ass.* **143**, 1044.
Courville, C. B. (1953) Cerebral Anoxia. Los Angeles.
Dallwig, H. C., Kolls, A. C., Loevenhart, A. S. (1915) *Amer. J. Physiol.* **39**, 77.
Doig, A., Shafar, J. (1956) *Quart. J. Med.* **25**, 1.
Drinker, C. K. (1938) Carbon Monoxide Asphyxia. London.
Ershler, I., Kossmann, C. E., White, M. S. (1943) *Amer. J. Physiol.* **138**, 593.
Erslev, A. J. (1955) *Blood*, **10**, 954.
Fishman, A. P., Samet, P., Cournand, A. (1955) *Amer. J. Med.* **19**, 533.
Flint, F. J. (1954) *Lancet*, ii, 51.
Fulton, R. M. (1953) *Quart. J. Med.* **22**, 43.
Haldane, J. S. (1919) *Brit. med. J.* ii, 65.
Hecht, H. H., Samuels, A. J. (1952) *Fed. Proc.* **11**, 68.
Hurtado, A. (1932) *Amer. J. Physiol.* **100**, 487.
— Merino, C., Delgado, E. (1945) *Arch. intern. Med.* **75**, 284.
Kaltreider, N., Hurtado, A., Brooks, W. D. W. (1934) *J. clin. Invest.* **13**, 999.
Killick, E. M. (1940) *Physiol Rev.* **20**, 313.
Koller, F. (1956) *Dtsch. med. Wschr.* **81**, 516.
Kritzler, R. A. (1944) *War Med.* **6**, 369.
Landis, E. M. (1934) *Physiol. Rev.* **14**, 404.
Latts, E. M., Cummins, J. F., Zieve, L. (1956) *Arch. intern. Med.* **97**, 576.
Lawrence, J. H. (1955) Polycythæmia. New York and London.
Lemon, W. S. (1929) *Ann. intern. Med.* **3**, 430.
Lewis, R. B., Haymaker, W. (1948) *J. Aviat. Med.* **19**, 306.
Lucas, B. G. B. (1946) *Thorax*, **1**, 128.
McFarland, R. A. (1938) Cited by Armstrong (1952).
McMichael, J. (1937) *Quart. J. exp. Physiol.* **27**, 73.
Mayers, M. R. (1930) Cited by Drinker (1938).
Merino, C. F., Reynafarje, C. (1949) *J. Lab. clin. Med.* **34**, 637.
Moore, C. V., Dubach, R., Minnich, V., Roberts, H. K. (1944) *J. clin. Invest.* **23**, 755.
Owren, P. A. (1947) *Lancet*, i, 446.
Price-Jones, C. (1921) *J. Path. Bact.* **24**, 326.
Quick, A. J., Stanley-Brown, M., Bancroft, F. W. (1935) *Amer. J. med. Sci.* **190**, 501.
Ramsay, W. N. M. (1954) *Biochem. J.* **57**, xvii.
Ratto, O., Briscoe, W. A., Morton, J. W., Comroe, J. H. jun. (1955) *Amer. J. Med.* **19**, 958.
Richards, J. (1913) *Phil. Trans.* **203**, 316.
Rosenthal, T. B. (1948) *J. biol. Chem.* **173**, 25.
Sands, J., DeGraff, A. C. (1925) *Amer. J. Physiol.* **74**, 416.
Selye, H. (1946) *J. clin. Endocrin.* **6**, 117.
Simpson, T. (1954) *Brit. med. J.* i, 297.
Smith, H. P., Belt, A. E., Arnold, H. R., Carrier, E. B. (1924–25) *Amer. J. Physiol.* **71**, 395.
Sunderman, F. W., Boerner, F. (1949) Normal Values in Clinical Medicine. Philadelphia and London.
Van Liere, E. J. (1942) Anoxia: its Effects on the Body. Chicago.
Van Slyke, D. D., Neill, J. M. (1924) *J. biol. Chem.* **61**, 523.
Waring, J. J., Yegge, W. B. (1933) *Ann. intern. Med.* **7**, 190.
Weber, J. M., Gregg, L. A. (1955) *Ibid*, **42**, 1026.
Westlake, E. K. (1955) *Brit. med. J.* ii, 960.
— Simpson, T., Kaye, M. (1955) *Quart. J. Med.* **24**, 155.
Wiggers, C. J. (1941) *Ann. intern. Med.* **14**, 1237.
Wilson, R. H., Borden, C. W., Ebert, R. V. (1951) *Arch. intern. Med.* **88**, 581.

ACUTE RENAL FAILURE FOLLOWING INTRAVASCULAR HÆMOLYSIS

G. M. BULL
M.D. Cape Town, F.R.C.P.
PROFESSOR OF MEDICINE IN THE QUEEN'S UNIVERSITY OF BELFAST

A. M. JOEKES
M.A., B.M. Oxfd, M.R.C.P.
RESEARCH ASSISTANT, ST. MARY'S HOSPITAL, LONDON

K. G. LOWE
M.D. St. And., F.R.C.P.E., M.R.C.P.
LECTURER IN MEDICINE, UNIVERSITY OF ST. ANDREWS

WE have already reviewed our clinical experience of acute renal failure following concealed accidental hæmorrhage of pregnancy and criminal abortion (Bull, Joekes, and Lowe, 1955, 1956), and we now record our experience of renal failure associated with intravascular hæmolysis. This includes 13 hæmolytic transfusion reactions, an unexplained hæmolytic episode following delivery of an anencephalic monster, a fatal hæmolytic episode following splenectomy for nocturnal hæmoglobinuria, and a case of what was probably blackwater fever. 2 cases are also included of renal failure due to vascular collapse following blood-transfusion.

Hæmolytic Episodes

The details of the hæmolytic transfusion reactions are given in the appendix. In all the reaction was thought to be the major, and in some the only, cause of renal failure. When transfusion was given to counter acute blood-loss, however, the renal ischæmia associated with shock could have been responsible in part for the development of tubular necrosis. There were 5 cases of known ABO incompatibility, 3 of known Rh incompatibility, and 1 of Kell incompatibility. In case 8 there was a fatal error in the storage of the blood: it had been kept in the bone-bank instead of the blood-bank so that the red cells would have been damaged or even lysed before transfusion and, strictly speaking, the term "intravascular hæmolysis" should not be applied to this case. The smallest amount of incompatible blood given was about half a pint (case 2). All the patients had several of the characteristic features of intravascular hæmolysis, such as hæmoglobinæmia, hæmoglobinuria, jaundice, backache, headache, and vomiting

We saw none of the patients during the onset phase of illness, but at various stages in the anuric or early diuretic phases when they came under our care. Some of them were presented briefly in previous publications (Bull, Joekes, and Lowe 1949, 1950). The pattern of renal dysfunction was the same as that seen in other cases of acute tubular necrosis due to such varied causes as mercury poisoning, postoperative or posthæmorrhagic shock, criminal abortion, and concealed accidental hæmorrhage of pregnancy. Figs. 1 and 2 illustrate representative mild and severe examples of the episodes of renal failure, in which conservative management was followed by satisfactory clinical recovery. Of the 13 patients, only 5 recovered; but some of the patients were seen before rational conservative management had become generally accepted in this country. In cases 5, 7, and 8, the patient had been overloaded with fluid before transfer to our unit and pulmonary œdema developed. Case 6 had been similarly overloaded; it was hoped to improve his condition by dialysis with the artificial kidney but during this procedure (which requires heparinisation of the patient) he died from hæmorrhage from œsophageal varices. Case 10 died from staphylococcal pyæmia (with cerebral abscesses) following dialysis with the artificial kidney; the organism was resistant to the antibiotics then available. With modern standards of careful conservative management, supplemented when necessary by efficient dialysis methods, such deaths as in these 5 patients could probably be avoided. Nevertheless the mortality will probably remain higher in tubular necrosis due to transfusion-reaction than in comparable renal lesions due to chemical poisons, criminal abortion, or concealed accidental hæmorrhage, for the simple reason that patients who have had transfusion carry the added burden of the primary disease or injury that necessitated transfusion. Case 11 (an elderly man who underwent gastrectomy and needed a subsequent operation for "burst abdomen") and case 4 (a patient who had had considerable blood-loss and shock during

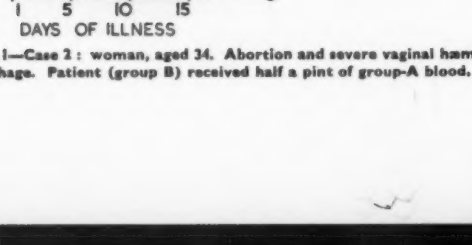


Fig. 1—Case 2: woman, aged 34. Abortion and severe vaginal hæmorrhage. Patient (group B) received half a pint of group-A blood.

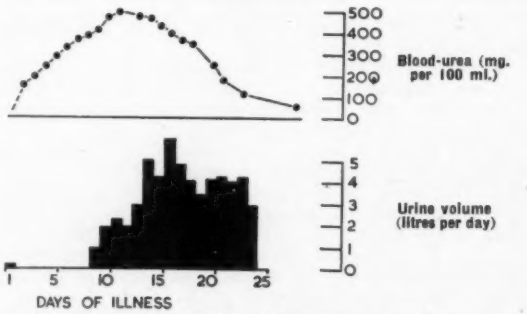


Fig. 2—Case 3: woman, aged 41. Postpartum hæmorrhage. Patient (group O) received 1 pint of group-A blood.

abdominoperineal resection and had widespread metastatic carcinoma) illustrate this point. Age is important, too, in that elderly persons seem to tolerate protracted anuria badly—e.g., cases 11 and 12.

POSSIBLE CONTAMINATION

In contrast to these 13 cases of hæmolytic transfusion reaction, the following case is the only one we have seen in which transfusion reaction was thought to be due to contaminated blood.

Case 14.—A woman, aged 20, had previously enjoyed good health. Her first pregnancy was uneventful and she was delivered of a live male infant on July 7, 1952. A severe labial tear during delivery led to profuse hæmorrhage, pallor, and faintness and one pint of blood was transfused. On July 10 her hæmoglobin level (Hb) was 7·5 g. per 100 ml. and a second transfusion was given. The patient's blood group was O,Rh+, and both transfusions were of blood of this group. As soon as the second blood-transfusion was begun, the patient had generalised tingling and burning sensations. Twenty-five minutes later the transfusion was stopped after half a pint had been given, on account of rigor, headache, backache, and vomiting. The blood-pressure had fallen to 80/50 mm. Hg, the pulse-rate had risen to 140 a minute, and the temperature to 104·6°F. During the rest of the day she complained of tightness in the chest, and the blood-pressure remained low (about 70/30 mm. Hg). She was catheterised and 400 ml. of urine obtained. Urine-testing was said to be normal. Next day she was still collapsed, blood-pressure 80/20 mm. Hg, pulse-rate 140–170 per min., and cold extremities. She was treated with intravenous glucose-saline solution, penicillin, and chloramphenicol. She passed 250 ml. of urine, which was acid and contained bile pigment. She was clinically jaundiced.

On July 12 she passed 1200 ml. of bile-stained urine, the specific gravity of which varied from 1010 to 1015. The blood-urea had risen to 200 mg. per 100 ml. She was still collapsed and had become semiconscious. Her muscles were very tender. Blood-culture was sterile. On July 13 she was comatose and twitched frequently. She died later that day, seventy-nine hours after the second blood-transfusion and on the seventh day of the puerperium. A culture from the blood-bottle grew a spore-bearing aerobacter. Necropsy was "compatible with a diagnosis of septicæmia." There was no renal tubular necrosis.

Comment.—In this case it was thought that azotæmia was due to reduced glomerular filtration during the acute febrile illness, but that renal blood-flow had been adequate for nutrition of the tubular epithelium—i.e., the high blood-urea could be ascribed to acute circulatory renal insufficiency ("extra-renal uræmia").

UNEXPLAINED REACTIONS

The following transfusion reaction could not be explained.

Case 15.—A woman aged 40 had severe iron-deficiency anæmia (Hb 5·6 g. per 100 ml.) due to menorrhagia, and was awaiting hysterectomy for myomata. During the transfusion of a second pint of blood a severe reaction developed, with headache and backache. The blood-pressure remained low, and she became anuric, jaundiced, febrile, and comatose. Despite vigorous supportive measures she died sixty-four hours after the onset of the transfusion-reaction. The blood-urea had risen to 208 mg. per 100 ml. There was no evidence of incompatibility or pyrogens, and blood-culture was negative. At necropsy there was acute hepatic necrosis, but the cause of this was not apparent. The kidneys showed only some post-mortem autolysis. Renal failure seemed to be due to severe persistent shock—i.e., acute circulatory renal failure which had not progressed to acute tubular necrosis.

We have had no cases of renal failure following intravascular hæmolysis due to accidental infusion of distilled water or to irrigation with distilled water at prostatectomy but we have observed one unexplained hæmolytic episode following pregnancy:

Case 16.—A woman, aged 38, had had 9 normal pregnancies. Her 10th was apparently normal until the onset of labour at the expected date. She was admitted to hospital with obstructed labour (horizontal lie) and, under general anæsthesia (thiopentone, cyclopropane, oxygen, and atropine only), she was delivered of an anencephalic monster. Her general condition was good both during and after delivery and she had no blood-transfusion. Within a few hours of delivery, however, hæmoglobinuria and transient spherocytosis developed, then jaundice and anuria. Her illness ran the typical course of acute tubular necrosis with oliguria (daily urine-volume <300 ml. per day) for ten days and a maximal blood-urea of 549 mg. per 100 ml. on the tenth day. She was put on the intragastric drip-feeding régime and made a good clinical recovery.

HÆMOLYSIS AND RENAL FAILURE AFTER SPLENECTOMY

The following case illustrates the severity of intravascular hæmolysis and renal failure (a known hazard) that may follow splenectomy in nocturnal hæmoglobinuria (Marchiafava-Micheli syndrome).

Case 17.—A man, aged 46, was admitted to hospital on April 3, 1953. He had had malaria several times in India between 1926 and 1930, but had been well since then until April, 1952, when he began to have episodes of backache, shivering, and the passage of dark urine. He became anæmic and had breathlessness on exertion. The youngest of his 5 sisters had had an episode of severe anæmia (Hb 3 g. per 100 ml.) at the end of a pregnancy some years earlier. (This was thought at first to be pernicious anæmia of pregnancy but fuller investigation had shown that she was in a crisis of hæmolytic anæmia. She got well following splenectomy and has since had 3 normal pregnancies.)

On March 30, 1953, our patient had pain in the right renal angle with generalised malaise, and noticed that his urine was dark brown. In hospital he was found to be anæmic (Hb averaging about 7·5 g. per 100 ml.) and to have constant reticulocytosis (averaging 5 to 8%). The only features on

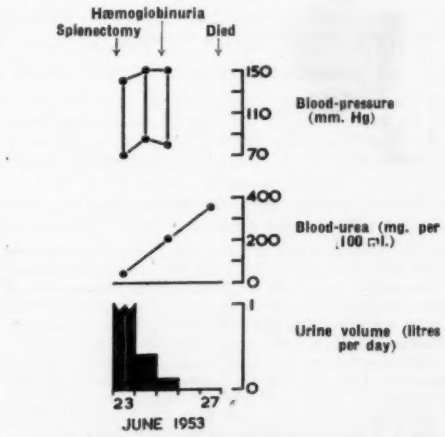


Fig. 3—Case 17: man, aged 46. Severe hæmolytic episode with oliguria following splenectomy in nocturnal hæmoglobinuria.

physical examination were pallor and a palpable spleen. It was later established that his hæmoglobinuria was chiefly nocturnal. Ham's serum acidification test was positive, Coombs test (direct and indirect) was negative, the Donath-Landsteiner reaction was negative, and the test for cold agglutinins was negative. The urine contained albumin +, hæmoglobin +, acid hæmatin +, urobilinogen excess, and granular casts. The serum-bilirubin was 2·0 mg. per 100 ml., and the blood-urea 32 mg. Fairly severe nocturnal hæmoglobinuria continued intermittently during hospital stay, and splenectomy was done on June 23. During that day he was well and the urine was normal. Overnight, however, he developed severe hæmoglobinuria, and subsequently became oliguric and then anuric. The blood-urea rose rapidly, and he developed signs of high blood-potassium. The Hb fell from 9·0 to 7·2 g. per 100 ml. He died in coma on June 27 (fig. 3).

Apart from left pleural effusion the only findings of note at necropsy were in the kidneys, which were of normal size and a uniformly dark-brown colour. The renal pelves contained a small amount of dark brown sludge. Histologically there was very intense hæmosiderosis of the kidneys, mainly confined to the proximal convoluted tubules. In the proximal tubules there were numerous brownish-red casts giving a positive peroxidase-reaction. The distal convoluted tubules contained similar pigmented casts, a few hyaline casts, and

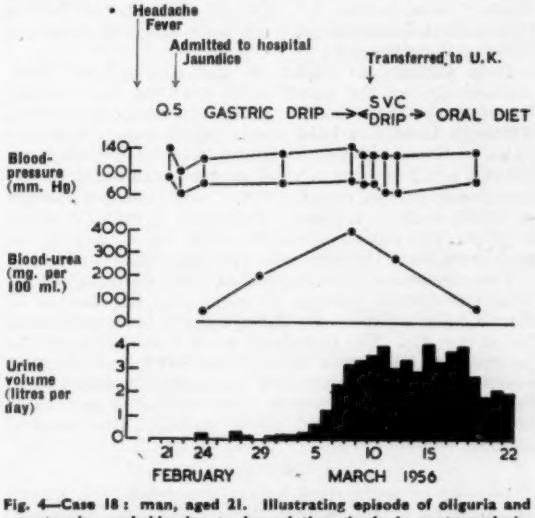


Fig. 4—Case 18: man, aged 21. Illustrating episode of oliguria and azotæmia, probably due to hæmolytic episode in acute malaria. Q.5 = intravenous injection of quinine gr. 5.

many desquamated epithelial cells. There was no evidence of tubular necrosis or of tubulovenous communications.

INTRAVASCULAR HÆMOLYSIS ASSOCIATED WITH DRUGS

We have encountered one possible case of acute renal failure due to intravascular hæmolysis following intravenous use of mephenesin during general anæsthesia (Bywaters and Joekes 1948). Our only other case of acute renal failure that might possibly have been due to drugs was the following case of malaria treated with chloroquine and intravenous quinine.

Case 18.—A British soldier, aged 21, was admitted to hospital in the Middle East on Feb. 21, 1956, with four days' history of headache and fever. A diagnosis was made of malarial infection due to *Plasmodium falciparum* and *P. vivax*. He was treated with chloroquine and with quinine, which was twice given intravenously (gr. 5 on Feb. 21 and gr. 15 on Feb. 23). Slight jaundice was noticed on Feb. 22. Oliguria was first noted on Feb. 24, but no pigment was found in the urine. His illness was typical of acute tubular necrosis (fig. 4). He had severe oliguria for 10 days, and the blood-urea rose to 400 mg. per 100 ml. He was transferred home on March 7. During the early diuretic phase the urinary losses of water and electrolytes could not be restored by the oral route, and he was treated by an intravenous drip into the superior vena cava. His Hb had fallen to 5·6 g. per 100 ml. by March 8, and the only treatment for anæmia was oral iron during convalescence. He recovered fully.

Comment.—In this case there was insufficient evidence of intravascular hæmolysis for a certain diagnosis of blackwater fever, and it was impossible to incriminate quinine, a known hæmolytic agent. Nevertheless, the association of severe falciparum malaria, jaundice, severe anæmia, and acute renal failure in this case would appear to merit on clinical grounds a diagnosis of blackwater fever.

Discussion

The acute renal failure seen in the hæmolytic transfusion reactions and in cases 16 and 18 (which were probably also associated with intravascular hæmolysis) was comparable in clinical severity to the acute renal failure seen in poisonings, criminal abortion, and concealed accidental hæmorrhage of pregnancy. 8 of our 13 patients with hæmolytic transfusion reactions died, but at least 5 of these deaths might have been avoided (some of the patients were seen before rational conservative treatment of anuria became widely accepted in this country). In the 3 deaths that might possibly have been excused (cases 4, 11, and 12)—at least, as far as treatment of renal failure is concerned—the adverse factors that militated against recovery were age, recent laparotomy, and carcinoma.

It is salutary to reflect on the case-histories and, particularly, on the questionable need for some of the transfusions and on the gross errors in technique. Although there has been much improvement in recent years in these respects, it is our impression that there are still a fair number of needless deaths following blood-transfusion in this country every year, and not enough publicity is given to them. Indeed, it is difficult to get accurate information about the total annual number of such deaths and the various errors responsible for death.

The other cases of acute renal failure call for no special comment except perhaps to emphasise the danger in carrying out splenectomy for nocturnal hæmoglobinuria (as in case 17). The episode of acute renal failure in the patient with falciparum malaria (case 18) was of moderate severity, but clinical recovery was good. It would be of interest to know the present recovery-rate of such cases of blackwater fever and allied states in the tropical regions.

Summary

16 cases of acute renal failure associated with known or probable intravascular hæmolysis are described. 13 followed blood-transfusion, and were mostly due to technical errors, chiefly in cross-matching. The 3 other cases comprised an unexplained hæmolytic episode following pregnancy, a severe hæmolytic episode in falciparum malaria (treated with intravenous quinine), and a fatal hæmolytic episode following splenectomy in nocturnal hæmoglobinuria. 2 non-hæmolytic reactions to transfusion are recorded—1 due to infected blood, the other unexplained. Of the 15 cases of transfusion reaction (hæmolytic and non-hæmolytic), 10 were fatal. The need for transfusion was sometimes questionable and most of the deaths may have been avoidable.

APPENDIX

Case-reports of Hæmolytic Transfusion Reactions

Case 1.—A woman, aged 23, had a severe postpartum hæmorrhage and was given an emergency transfusion of group-O blood. While the second pint was being given, she had a rigor, and hæmoglobinuria, oliguria, and jaundice subsequently developed. Diuresis (more than 1 litre of urine per day) took place on the seventh day and the blood-urea rose to 363 mg. per 100 ml. on the tenth day. With conservative management she made a good recovery. The patient was group A, and the second pint of group-O blood had a high titre of anti-A-agglutinin. (This was the only case of transfusion reaction in our own hospital.)

Case 2.—Following abortion and severe vaginal hæmorrhage, a woman, aged 34, received about half a pint of incompatible blood (group A instead of B). This was followed by backache, vomiting, hæmoglobinuria, then anuria. Diuresis took place on the fifth day, the blood-urea rising to a maximum of 148 mg. per 100 ml. With conservative management she made a good recovery (fig. 1.)

Case 3.—A woman, aged 41, (group O) was given a transfusion of a pint of group-A blood for severe postpartum hæmorrhage. There were no immediate effects but hæmoglobinuria and oliguria subsequently developed. Diuresis took place on the tenth day, the blood-urea rising to a maximum of 492 mg. per 100 ml. With conservative management she made a good recovery (fig. 2.)

Case 4.—A man, aged 42, underwent abdominoperineal resection for rectal carcinoma, and on the third postoperative day was given 2 pints of group-A blood (his own group was O). Rigors and hæmoglobinuria developed and subsequently anuria and jaundice. With conservative management he was making a good recovery and the urinary output had risen to 800 ml. on the sixteenth day and the blood-urea to 320 mg. per 100 ml. But he had sudden diarrhœa on the seventeenth day, and died from shock. At necropsy there were widespread metastases.

Case 5.—A woman, aged 26, was delivered of a baby with mild erythroblastosis. Because of postpartum hæmorrhage 3 pints of Rh-positive blood were transfused. This was followed by hæmoglobinuria, then anuria. She was grossly overloaded with fluid and went into uræmic coma. She died on the seventh day just as dialysis with the artificial kidney had begun. Her serum anti-D titre had shown a rise to 1/32. Maximal blood-urea was 260 mg. per 100 ml.

Case 6.—A man, aged 25, had had previous splenectomy and many transfusions (some with mild hæmolytic reactions) on account of bleeding from œsophageal varices. The patient (Rh negative) had a further transfusion of blood (Rh positive) during the operation of portacaval anastomosis. This was followed by jaundice and anuria. At the time of transfer to our care on the seventh day his blood-urea was 340 mg. per 100 ml. and he was grossly overloaded with fluid. During treatment with the artificial kidney, he died from hæmorrhage from œsophageal varices (apparently related to the necessary heparinisation).

Case 7.—A woman, aged 49, was given a transfusion because of vaginal hæmorrhage following hysterectomy. She had had several transfusions previously on account of anæmia, and had had several increasingly severe reactions but without oliguria. She was Rh negative and was subsequently shown to have a high titre of anti-Rh agglutinins. This last transfusion-reaction was severe, and followed by anuria. She was grossly overloaded with fluid and had a needless and unsuccessful decapsulation of the kidneys. Despite onset of diuresis on the eighteenth day, shortly after transfer to our care, she died from heart-failure and pul-

monary œdema on the twenty-first day. The maximal blood-urea, on the seventeenth day, was 550 mg. per 100 ml.

Case 8.—A man, aged 23, underwent arthroplasty for Perthé's disease of the hip, and during operation had a "routine" blood-transfusion (1 pint). The anæsthetist noticed that he had "unusual elevations of blood-pressure," and postoperatively he went into a state of circulatory failure lasting several hours. He had hæmoglobinuria and subsequent oliguria. He was overloaded with fluid, and heart-failure with pulmonary œdema developed. Despite commencing diuresis, he died on the twenty-first day. Maximal blood-urea was 710 mg. per 100 ml. on the sixteenth day. It was subsequently learned that the blood had been stored by accident in the bone-bank at below freezing-point, and must therefore have undergone hæmolysis.

Case 9.—A woman, aged 42, had an "apparently compatible" blood-transfusion for blood-loss during hysterectomy. This was followed by hæmoglobinuria, oliguria, and jaundice. The blood-urea rose to a maximum of 285 mg. per 100 ml. With conservative management she made a good recovery.

Case 10.—A woman, aged 32, was admitted to hospital with incomplete abortion and severe vaginal hæmorrhage. A transfusion of group-O blood (not cross-matched) was stopped, after three-quarters of a pint had been given, on account of rigors. Cross-matched group-O blood was given later that day without reaction. The patient had jaundice and oliguria. Staphylococcal pyæmia developed following dialysis with the artificial kidney on the seventh day of anuria. The blood-urea rose to a maximum of 392 mg. per 100 ml. on the fifteenth day. Despite commencing diuresis, she died on the seventeenth day. There were multiple staphylococcal abscesses, including cerebral ones.

Case 11.—A man, aged 70, had a transfusion of 2 pints of "apparently compatible" blood during gastrectomy for duodenal ulcer. This was followed by hæmoglobinuria and oliguria. The blood-urea rose to a maximum of 533 mg. per 100 ml. on the fifteenth day. He needed repair of "burst abdomen" under general anæsthesia and bronchopneumonia developed. Despite commencing diuresis he died on the seventeenth day.

Case 12.—A man, aged 66, had a history of buccal carcinoma, chronic gastric ulcer, and several episodes of hæmatemesis and melæna. His last admission was on account of severe melæna. Because of anæmia (Hb 4·8 g. per 100 ml.) blood-transfusion was given. He was reported as group-A, and received 2 pints of group-A and 1 pint of group-O blood. Hæmoglobinuria and severe oliguria developed, and it was subsequently shown that his blood-group was O. Despite reasonably good fluid-balance, he remained oliguric. Uræmic coma and bronchopneumonia developed, and he died on the tenth day after transfusion.

Case 13.—A woman, aged 18 (para-2), bled following the delivery of a 32-week stillborn fœtus. The previous pregnancy and the antenatal period in the present pregnancy, had been uneventful, with no hypertension or proteinuria. For three weeks before admission she had felt no fœtal movements. She was admitted in labour and delivered of the fœtus. After delivery she bled slowly despite ergometrine, and during the following two hours her blood-pressure fell slowly from 110/70 to 70/50, and remained at that level for about three-quarters of an hour. 5 pints of blood were then transfused; her general condition improved, and within thirty minutes the blood-pressure rose to 100/70. There was no obvious reaction to the transfusion, but twelve hours later oliguria was noted. Blood drawn at that time showed hæmoglobinæmia, and this proved to be due to a Kell incompatibility. She was treated immediately with a diet of 600 ml. daily of 50% glucose in water by intragastric drip, and apart from some vomiting the course was uneventful. One litre of urine was passed on the seventeenth day. The highest blood-urea, recorded on the fourteenth day, was 330 mg. per 100 ml. The serum-sodium ranged from 137 to 152 m.eq. per litre, and the serum-potassium on the twelfth day was reported to be 8 m.eq. per litre. Glucose and insulin were given intravenously, and next day the serum-potassium was 5·6 m.eq. per litre and subsequently remained below 5 m.eq. per litre.

REFERENCES

Bull, G. M., Joekes, A. M., Lowe, K. G. (1949) *Lancet*, ii, 229.
— — — (1950) *Clin. Sci.* 9, 379.
— — — (1955) *Lancet*, ii, 1152.
— — — (1956) *Ibid*, i, 186.
Bywaters, E. G. L., Joekes, A. M. (1948) *Proc. R. Soc. Med.* 41, 420.

RELATIONSHIP BETWEEN NAUSEA AND/OR VOMITING IN EARLY PREGNANCY AND ABORTION

JACK H. MEDALIE
M.B., B.Sc. Witw'srand

ACTING PHYSICIAN IN CHARGE OF FAMILY AND COMMUNITY HEALTH CENTRE, JERUSALEM, ISRAEL

A HUNDRED consecutive pregnant women were studied to ascertain whether the severity and duration of nausea/vomiting in the first trimester is related to abortion. The facts were obtained during 1950–52 routine antenatal work in rural general practice in Israel.

Methods and Materials

The nature of the practice made it possible for all the women to be seen early in pregnancy and without exception to be followed through to and after childbirth, which generally took place in hospital in Haifa. The information was obtained by personal interview from the women early in pregnancy, when they were experiencing their symptoms—e.g., vomiting. In all cases the history was checked subsequently either by the nurse or by myself. On two occasions the woman's story was found to be unreliable, and these two women were excluded from the survey. A third was excluded because she had had a therapeutic abortion. All the patients were members of coöperative agricultural settlements situated in the coastal belt of Israel 15–40 kilometres south of Haifa. On the whole the settlers enjoyed good health, with general and infant mortality-rates lower than those of the country as a whole.

The following data were obtained from each woman:

Age.—The ages ranged from 17 to 37. Fourteen women were 30 years of age or over.

Parity.—Fifty-nine women were primigravidæ and forty-one had been pregnant previously.

Period of Residence in Israel.—Forty-nine women had lived in Israel less than 3 years, forty-eight 3 or more years, and three had been born in Israel.

Country of Origin.—Of the ninety-seven women not born in Israel sixteen came from Central Europe (Holland, Poland, Rumania, Czechoslovakia, Germany, or Austria), twenty-nine from the Balkans (Greece, Turkey, or Bulgaria), eight from North Africa (Morocco or Tunisia), one from Iraq, and forty-three from "Anglo-Saxon" countries (South Africa, England, United States of America, and Australia).

The amount, severity, and duration of the nausea and vomiting were designated as follows:

– – No nausea or vomiting whatsoever.
+ Mild and occasional nausea or vomiting usually in the morning.
+ + Moderate: extreme nausea throughout the day for a week or more and/or vomiting at least twice a day.
+ + + Severe: vomiting almost any time food was taken, if continued for more than one day.

Types of abortion included the clinical diagnosis of threatened, inevitable, incomplete, complete, and missed abortions.

The following is an example of the recording on each woman's card:

Index no.	*Name*	*Settlement*	*Age*	*Parity*	*Country of origin*	*Years in Israel*
1	P.H.	N-Y	33	2	Poland	12
2	R.S.	G-H	37	3	Turkey	2½

Nausea/vomiting	*Abortion*	*Remarks*
+ +	–	Normal delivery and child
– –	Threatened at end of second month	Normal delivery and child

Results and Their Analyses

The percentage of all the women who had nausea/vomiting was 71%. The percentage of all the women who had clinical vaginal bleeding was 23%. The remaining 6% had neither nausea/vomiting nor clinical bleeding.

Assessment of Results

Table II does not suggest that the age of the woman, the parity, the length of residence in the country, or

TABLE I

History of nausea/vomiting	Total no.	Complete abortions	Threatened abortion	Total abortions
Severe/moderate	52	—	1 (1·9%)	1 (1·9%)
Mild/none ..	48	11(22·9%)	11(22·9%)	22(45·8%)
Significance of the difference *	..	6·1	3·3	5·9

the area of origin are related to either nausea and vomiting or to abortion. Table I shows, however, that no woman aborted after having severe or moderate nausea/vomiting, and only one threatened to abort. Also, all the aborters and eleven of the twelve who had threatened abortion had had little or no nausea/vomiting. There is in fact a statistically significant relationship between nausea/vomiting on the one hand and all types of abortion on the other—i.e., the standard of error of the difference is greater than 2 in all cases. This significant relationship is an inverse one—i.e., the more severe the nausea/vomiting, the less the tendency to abort; or (put the other way) those who aborted had significantly less nausea/vomiting or none.

In the hundred women studied a statistically significant inverse relationship was found between nausea/vomiting and abortions in the first trimester of pregnancy, confirming the clinical impression which had led me to undertake the study. This impression became so strong

TABLE II

—	Total no.	Severe/moderate nausea	Total abortions	Significance * of difference related to: Nausea	Abortions
Period in country:					
Less than 3 yr...	49	22(44·9%)	13(26·5%)	0·39	0·79
3 or more yr. ..	51	30(58·8%)	10(19·6%)		
Age (yr.):					
< 30 yr.	86	44(51·2%)	19(22·1%)	0·41	0·51
30 or more ..	14	8(57·1%)	4(28·6%)		
Parity:					
Primigravidæ ..	59	30(50·9%)	17(28·8%)	0·25	1·8
Pregnant previously ..	41	22(53·7%)	6(14·6%)		
Area of origin:					
Central Europe..	16	11(68·8%)	1 (6·3%)		
Balkans ..	29	17(58·6%)	5(17·2%)	p > 0·5	p > 0·2†
"Anglo-Saxons"	43	18(41·9%)	14(32·6%)		
Others	12				

* This figure indicates the number of times the actual percentage difference is greater than the standard error of the difference. A figure of 2 or more is regarded as significant.
† Not significant.

that, in the course of time, if a pregnant woman complained of being very bilious and vomited a great deal, I dismissed her in my own mind from being a potential aborter; whereas I was put on my guard by those women who said they "felt perfect!"

Speert and Guttmacher (1954) regard the amount of nausea as a prognostic sign in women with vaginal bleeding, and, as theirs is the only study of a similar kind that I have found on record, I shall quote them:

"From a practical standpoint, therefore, the patient who reports a small amount of fresh-appearing vaginal bleeding early in pregnancy, without uterine cramps, can properly be reassured as to its probable innocent nature, especially if she continues to be nauseated. Only a minority of such patients are destined to abort. On the other hand, the patient who has had no nausea and who begins to bleed with a brown stain has a poor prospect of fœtal salvage."

Discussion

It is difficult to estimate accurately the incidence of nausea/vomiting in pregnancy, and the accuracy appears to depend on the relationship between the members of a community and the health workers. However, many authorities estimate that this symptom-complex occurs in over half of all pregnant women (DeLee and Greenhill 1947). The theories of the ætiology of this complaint range far and wide, and the treatment is a reflection of the current popularity of certain theories. Some of the more important theories may be classified under the following headings (Browne 1947):

Neurosis.—The literature abounds with statements to the effect that nausea/vomiting is an expression of an unconscious rejection of the pregnancy. There are also studies which show that "psychiatric study does not support the theory that women with nausea/vomiting of pregnancy are neurotic (Bernstein 1952). Weiss and English (1946) regard nausea/vomiting in pregnancy as a psychosomatic problem, the relative importance of the psychological factors depending on the individual make-up—a conclusion which might justifiably be applied to any condition in medicine. Prof. B. Zondek tells me that he firmly believes that nausea/vomiting has a strong emotional basis, and utilises suggestion as the main plank of his treatment, even in cases severe enough to be admitted to hospital.

Toxæmia.—A toxin from the placenta or from the fœtus is presumed to cause vomiting.

Carbohydrate deficiency leading to mild ketosis with nausea and vomiting (Best and Taylor 1950).

Endocrinological theories appear to have the greatest following. These theories relate nausea and vomiting to the action of the anterior lobe of the pituitary gland, temporary insufficiency of the adrenal cortex, and secretion of the corpus luteum (Greenblatt 1947, Bertling 1948, Finch 1949, Dorsey 1949, Merkel 1952).

Allergy to an "allergen" from the endocrine glands (Finch 1949).

Sociocultural Factors.—Margaret Mead (1935) makes the very interesting statement that in Arapesh (New Guinea Islands), "morning-sickness during pregnancy is unknown." No mention is made of abortions, and unfortunately her description (Mead 1956) of her return to the New Guinea Islands 25 years later does not refer to the changes brought about in "morning-sickness" by the islanders' contact with "Western culture" during the second world war. If many of the difficulties and the duration of breast-feeding depend on sociocultural factors, perhaps such factors affect the incidence and severity of nausea and vomiting in pregnancy; but, if so, we do not know whether they affect the emotional state, which in turn affects the output of the endocrine organs.

In the present stage of our knowledge it must be admitted that the exact ætiology is unknown, although the main emphasis is on an endocrine basis with a varying degree of involvement of emotional factors. The relationship of emotions to stimulation of the endocrine glands is an exciting field of medicine which is still largely unmapped.

The common type of *abortion* in the first trimester of pregnancy has been regarded as due to a temporary lack of progestin plus a weak attachment of the placenta (Browne 1947) but many other causes have been suggested (DeLee and Greenhill 1947). Here again, however, we must admit that though there is probably endocrine imbalance, the exact cause is usually unknown.

The clinical evidence of the present community shows a significant inverse relationship between nausea/vomiting and abortion of early pregnancy, suggesting common factors in their ætiology, whether due to endocrine imbalance or not. This may give a lead to other workers searching for the cause of these conditions.

Summary

A hundred consecutive pregnant women in a rural general practice were investigated as regards the incidence and severity of nausea/vomiting and signs of abortion during the first trimester of pregnancy.

No clinical or statistical significance was found between the women's age, parity, or period in the country, and either nausea/vomiting or abortion.

A statistically significant relationship was found between nausea/vomiting and abortions in the first trimester of pregnancy, thus confirming the clinical impression that the more a pregnant woman vomited the less chance she had of aborting, and vice versa.

This significant inverse relationship between nausea/vomiting and abortions suggests some common factors in their ætiology.

My sincerest thanks are due to Nurses F. Lewis and S. Mills for their coöperation; Prof. S. L. Kark for insisting on my publishing this work; Dr. Margaret Yekutiel for statistical aid; and, last but not least, my wife, June, whose training of most of these women in natural childbirth methods made their relationship with us very warm and greatly contributed to its successful completion.

REFERENCES

Bernstein, I. C. (1952) *Minn. Med.* **35**, 34.
Bertling, M. H. (1948) *Amer. J. Obstet. Gynec.* **56**, 733.
Best, C. H., Taylor, N. B. (1950) The Physiological Basis of Medical Practice. 5th ed., Baltimore.
Browne, F. J. (1947) Antenatal and Postnatal Care. London; pp. 181, 326.
DeLee, J. B., Greenhill, J. P. (1947) Principles and Practice of Obstetrics. 9th ed., Philadelphia and London.
Dorsey, C. W. (1949) *Amer. J. Obstet. Gynec.* **58**, 1073.
Finch, J. W. (1949) *Ibid*, p. 591.
Greenblatt, R. B. (1947) Office Endocrinology. 3rd ed., Springfield, Ill.
Mead, M. (1935) Sex and Temperament in Three Primitive Societies London; p. 32.
— (1956) New Lives for Old. New York.
Merkel, R. L. (1952) *Amer. J. Obstet. Gynec.* **64**, 416.
Speert, H., Guttmacher, A. F. (1954) *J. Amer. med. Ass.* **155**, 712.
Weiss, E., English, O. S. (1946) Psychosomatic Medicine. 2nd ed., Philadelphia and London.

A RAPID METHOD OF ESTIMATING BLOOD-GLUCOSE RANGES

J. KOHN
Med. Dipl. Lwow, D.C.P.
CONSULTANT PATHOLOGIST, QUEEN MARY'S (ROEHAMPTON) HOSPITAL, LONDON

THERE appears to be an increasing demand for a rapid simple method of roughly estimating blood-sugar levels. Most of the "rapid" methods published, however, require special equipment and involve venepuncture and subsequent time-consuming separation or filtration.

Lately there have been reports on enzyme tests for approximate estimations of glucose in serum, plasma, or even tears (Seltzer 1956, Baron and Oakley 1957, Lewis 1957). The results were very encouraging. For obvious reasons a technique requiring only one drop of fresh blood and no apparatus or reagents would be best. Such a method, which has already been outlined (Kohn 1957), is described in detail here. It is based on the use of 'Clinistix,' an enzyme test strip * used for detecting glucose in urine. Clinistix was preferred because the background is white and the texture firm.

Enzyme test strips have been used extensively for qualitative tests of glucose in urine and have been shown to be highly specific and reliable (Leonards 1957, Luntz 1957). Attempts at quantitative estimations of glucose in urine have not, however, been satisfactory (Hunt et al. 1956, Tunbridge et al. 1956), mainly because of extreme variations in the chemical composition and the pH of urine, both of which can vary widely. These factors and also the presence of inhibiting substances are likely to upset the rather delicately balanced enzyme reagent system. Blood, on the other hand, with its comparatively stable chemical composition and pH, offers much more favourable conditions for a correlation of true glucose values with the intensity of colour developed on the enzyme test strip.

*Made by Ames Co. (London) Ltd., Nuffield House, Piccadilly.

Technique and Materials

A drop of fresh blood from a pricked finger or ear is placed gently (just touching and not rubbed in) on the impregnated tip of the clinistix so as to cover a length of about 0·5 cm. Only fresh blood should be used because oxalated or citrated blood is more difficult to wash off. The blood is left on the clinistix for 20 seconds. It is then washed off under a stream of running water (ordinary tap-water is adequate for this purpose). The washing should not exceed 5 seconds; it is usually completed in less time. If, as sometimes happens, the blood does not wash off completely, another clinistix will usually give a satisfactory result. After the blood has been washed off, a green-blue to dark-blue colour is revealed and is immediately compared with a colour scale. The matching should be completed within 25 seconds from the time the blood has been washed off. Correct timing is essential because the colour continues to increase in intensity.

Various batches of clinistix were compared for sensitivity. There were no appreciable differences except in one bottle, which, however, may have been left open overnight. Some differences of texture of the impregnated tip were observed. Blood washed off less easily from rougher surfaces. A definite sign of deterioration is a brownish colour of the impregnated tip. A batch showing this sign should be discarded. It appears to be very important to follow the manufacturers' instructions that the container should be screwed on tight when not in use, and that exposure to light should be avoided.

Design of Investigation

The aim of the investigation was, first of all, to find out whether there is a consistent correlation between the intensity and shade of colour developed on the clinistix and the blood-sugar level determined by a recognised biochemical method. After preliminary trials with solutions of known glucose concentrations, a colour chart, with three arbitrarily selected colours, was obtained for classification purposes, and the colours were designated A, B, and C. The intensity of colour developed on the clinistix was then compared with the chart. Intermediate colours were read as: less than A, A–B, and B–C. All examinations were made on duplicate samples of blood obtained at the same time. 545 samples of blood were examined.

The clinistix test and colour-matching were done as follows: 86 cases by a group of two workers (X); 299 cases by a group of three workers (Y); and 160 cases by worker Z. The corresponding blood-sugar determinations were made by the Asatoor and King method by X, the King and Garner method by Y, and the Folin Wu method by Z. Z and Y obtained their samples in a diabetic clinic, and X in a routine hospital laboratory.

The results of the colour-matching were recorded immediately after the tests were done, which was long before the accurate results were known. Several observers were chosen for this investigation to assess the scatter of results among a group of persons with various degrees of experience and likely to differ in their appreciation of colour. If workers not familiar with the procedure are to use the test, these factors must be taken into account.

Results

The results obtained in 545 samples of blood are set out graphically in figs. 1 and 2. These results show that, under the conditions of the test, there is a definite and constant correlation between certain ranges of blood-glucose levels and the intensity and shade of colour.

The sensitivity of clinistix to glucose in blood under the test conditions seems to be about 0·03–0·04 g. per 100 ml., which is about twice its sensitivity to glucose in urine (Hunt et al. 1956).

Blood-sugar levels below 30–40 mg. per 100 ml. do not produce any colour. The first trace of a faint greenish-blue colour may be seen at a level just above 30 mg. per 100 ml. The colour developed on the clinistix ranges from a pale green-blue (less than A) to a more intense blue-green (A), through a deeper blue (B), to a navy blue (C) (fig. 1).

The results are more accurate in the lower ranges with less intense colours, where the colour differences are much easier to appreciate. For the same reason the blood-sugar ranges, indicated by the colour on the clinistix, widen as the intensity of colour increases. Levels above about 400 mg. per 100 ml. probably produce a maximum intensity of colour and are too deep for any gradation to be appreciated. Therefore higher blood-glucose levels can only be estimated as " more than 400 mg. per 100 ml."

Blood-sugar levels corresponding to the four main groups—no colour, A, B, and C—do not appear to overlap at all. Overlapping occurs, as could be expected, in the intermediate colour ranges. The sharp distinction between the extremes may have an immediate practical application, even when no colour chart is available, because no colour or only a faint trace of colour denotes hypoglycæmia, and a deep-blue denotes hyperglycæmia.

Discussion

There are two main variables in the test: the timing at all three stages—contact with blood, washing, and reading—and the observers' personal variation in appreciation of colour. The time factor is important because the colour still continues to develop after the blood has been washed off. To avoid matching deep colours the timing of the test has been deliberately set in such a manner that normal and moderately raised blood-sugar levels fall within the range of comparatively pale colours.

The results obtained depend to a great extent on the correct appreciation of colour. Experience improves the results, as is well shown in fig. 2, which shows the scatter obtained by various observers. The widest scatter is in group X, who started the investigations and had not had any previous experience.

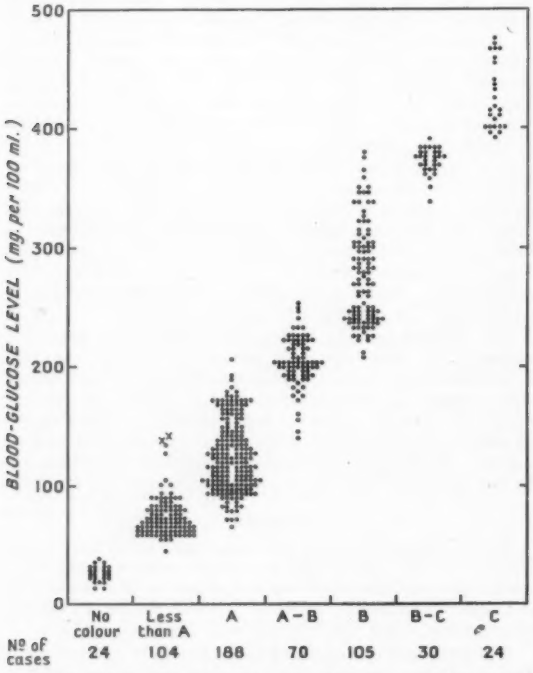


Fig. 1—Correlation between colours developed on clinistix under standard conditions and blood-glucose levels determined by conventional methods on duplicate samples of whole blood.

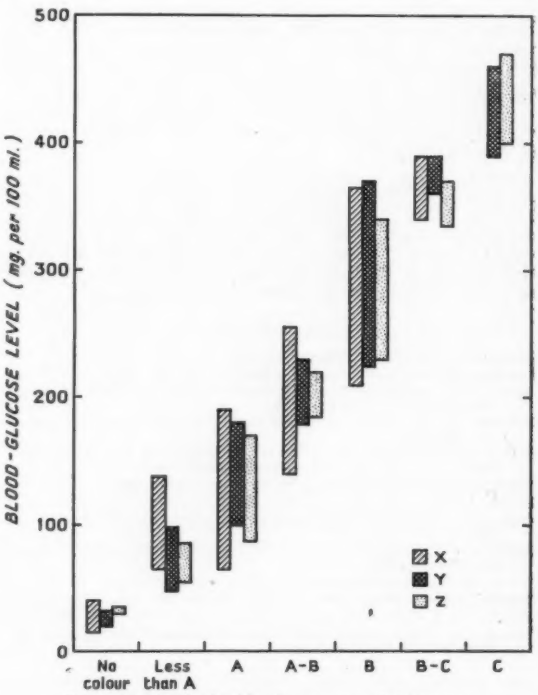


Fig. 2—Results obtained by three groups of observers.

A third possible variable is the sensitivity of the enzyme strip. This, however, appears to be fairly constant and, provided the manufacturers can maintain its standard, should not cause trouble.

The results seem to show that the variables can be kept within reasonable limits, provided a fairly rigorous technique is observed, particularly if it is realised that the method does not give exact levels but only indicates ranges of blood-sugar levels.

The clinistix will indicate the concentration of glucose alone and not of any other reducing substances. This is important because many of the blood-sugar methods estimate total reducing substances. In two cases of our series (marked with crosses in fig. 1) unexpectedly high results, compared with those of the clinistix test, were obtained. These high values were largely due to reducing substances other than glucose.

The results obtained in this investigation also suggest that a somewhat modified colour scale which would cover the clinically most important ranges might be more helpful. Such a scale was prepared, and preliminary trials have shown that these modifications have justified the expectations. Colour I (' Robbialac Blue-Green 161 C ') covers the normoglycæmic range up to about 130 mg. per 100 ml., colour II (' Cambridge Blue, A. G. Britton & Sons ') corresponds to moderately hyperglycæmic values, and colour III (' Midnight blue, Walpamur Satin Finish ') indicates 400 mg. per 100 ml. and over. It is hoped that, after an adequate number of parallel estimations have been made and the results found satisfactory, such a chart may become available through the manufacturers of clinistix. It seems quite feasible that in the future a special unit with enzyme test strips of graded sensitivities could be manufactured

which would be capable of much greater accuracy and would dispense with the need for a colour chart.

Summary

A rapid method of estimating blood-sugar ranges, based on the use of enzyme test strips, 'Clinistix' is described.

The procedure is simple and rapid because it does not require any apparatus or reagents and can be completed in about a minute.

The test indicates the clinically important blood-sugar ranges but does not provide exact figures. If this is clearly understood, the test should prove to be a helpful adjunct in diagnosis and treatment, particularly in emergency cases when laboratory facilities are not available, and in conditions in which speed and simplicity may outweigh the advantages of an accurate biochemical determination.

I am indebted to the makers of 'Clinistix' for the materials and technical coöperation and to Mr. T. O'Kelly for his invaluable help and suggestions.

REFERENCES

Baron, D. N., Oakley, C. M. (1957) *Lancet*, i, 326.
Hunt, J. A., Gray, C. H., Thorogood, D. E. (1956) *Brit. med. J.* ii, 586.
Kohn, J. (1957) *Lancet*, i, 213.
Leonards, J. R. (1957) *J. Amer. med. Ass.* **163**, 260.
Lewis, J. G. (1957) *Brit. med. J.* i, 585.
Luntz, G. (1957) *Ibid*, p. 499.
Seltzer, H. S. (1956) *J. Amer. med. Ass.* **162**, 1234.
Tunbridge, R. E., Paley, R. G., Coulson, D. (1956) *Brit. med. J.* ii, 588.

JEJUNAL STENOSIS FOLLOWING MESENTERIC-ARTERY OCCLUSION

C. F. HAWKINS

M.D. Lond., F.R.C.P.

CONSULTANT PHYSICIAN TO THE UNITED BIRMINGHAM HOSPITALS AND MID-WORCESTERSHIRE GROUP; LECTURER IN CLINICAL MEDICINE IN THE UNIVERSITY OF BIRMINGHAM

SYMPTOMS of occlusion of the mesenteric arteries depend (as do those of other pathological processes) on the speed at which the obstruction takes place. It has long been known, from necropsy studies, that a major mesenteric artery may undergo gradual and complete obliteration without causing symptoms (Chiene 1869, Trotter 1913, Klein 1921), and this has been confirmed by arteriography performed in the study of peripheral vascular disease (*Lancet* 1956). Where the occlusion is more rapid, but not sudden, ischæmia of the small intestine can probably cause symptoms. Periodic colicky pains in the central abdomen, perhaps associated with distension, constipation, or diarrhœa, may, in an arteriosclerotic patient, be due to atheroma of the mesenteric blood-vessels, and the syndrome of "intermittent mesenteric claudication" is described (Ortner 1903, Sauvé 1910, Trotter 1913). This is a diagnosis that cannot, at present, be confirmed objectively, and few are bold enough to make it in practice unless such symptoms immediately heralded a proved mesenteric occlusion. Usually, patients with mesenteric vascular obstruction present as acute abdominal emergencies, and provide baffling diagnostic problems seldom solved before laparotomy or necropsy (Bockus 1947, Gordin and Laurent 1956). The onset is sudden and symptoms dramatic. Severe abdominal pain is followed by vomiting, and diarrhœa, which may be bloody. Ileus develops in the infarcted loop of bowel and causes intestinal obstruction; and the loop becomes gangrenous unless resected. The patient may survive without surgery when the gut remains viable, but this is so unusual that little is known of any sequelæ. The following case demonstrates that a tubular stenosis resembling Crohn's disease may result.

Case-report

A man, aged 64, had a coronary thrombosis on March 31, 1955. He was recovering from this when sudden numbness developed in the right foot. There was no pulsation in the dorsalis pedis artery, but the numbness disappeared in twelve hours. Shortly afterwards, on the tenth day, he collapsed with sudden severe upper abdominal pain, sweated profusely, and vomited. He was given morphine and admitted to hospital. Previously, he had been healthy and had never had any gastro-intestinal symptoms.

He was shocked with upper abdominal tenderness and guarding, and bowel sounds were diminished. A mesenteric embolus from the cardiac infarction was diagnosed, and within twenty-four hours of the onset he was given 12,500 units of heparin, followed by phenindione ('Dindevan') 50–75 mg. daily for three weeks, the prothrombin level being maintained at about 30% of normal. The pain persisted for six days with such intensity that frequent injections of morphine were required. He had no further vomiting, but complete constipation lasting, apart from one bowel action, for fourteen days. A fever of 99°F, occasionally rising to 100°F, was continuous for eighteen days and subsided without antibiotics or chemotherapy.

Investigations

Electrocardiographic changes were typical of an anterior myocardial infarction: absent R waves in leads V1–V3, elevated ST segments, and inverted T waves in V2–V6 and Q waves in V4–V6. A plain radiograph of the abdomen and chest showed no abnormality. Erythrocyte-sedimentation rate (Westergren), 25 mm. in the first hour. Leucocytes 7000 per c.mm. (neutrophils 6265, lymphocytes 455, monocytes 210, eosinophils 70 per c.mm.). Blood-count otherwise normal apart from hæmoconcentration from dehydration: red cells 6,250,000 per c.mm., hæmoglobin 120% (17·8 g. per 100 ml.).

Progress

He returned home for convalescence after twenty-four days, but a week later he had a short attack of upper abdominal colic and vomiting. Similar episodes recurred without obvious cause and were associated with constipation. He was readmitted to hospital for observation on July 3, 1955. This was during a quiescent period, and no abnormal signs were found on examination. A barium progress meal showed a normal stomach and duodenum, but a stenosed segment, 5 to 6 in. long on the film, in the proximal jejunum (see figure). In spite of the narrow stricture, there was no appreciable dilatation or stasis proximal to it. The colon and terminal ileum filled normally during a barium-enema examination.

a b

Barium-meal radiograph showing stenosed segment in proximal jejunum: a, statim; b, at 2 hours.

There was achlorhydria but no excessive quantities of fluid were aspirated during the fractional test meal. He had noticed a change in his stools, which had become light in colour indicating probable steatorrhœa. The stools looked fatty, and microscopy showed undigested muscle and vegetable fibres, but no fat analysis was done. Occult-blood tests on the stools (Gregerson test) were intermittently positive. He was running a fever of about 99°F. Red blood cells 5,190,000 per c.mm., hæmoglobin 104% (15·4 g. per 100 ml.), packed-cell volume 46%, mean cell volume 90 c.μ., mean cell hæmoglobin concentration 33%. Serum electrolytes normal.

Diagnosis and Treatment

He had attacks of subacute intestinal obstruction due to the jejunal stenosis. His general condition had remained satisfactory apart from a loss of weight of 16 lb. On July 7, Mr. J. B. Leather performed a laparotomy under general anæsthesia. There was a length of grossly thickened small bowel starting about 6 in. from the duodenojejunal junction. It was 2–3 in. long; each end terminated abruptly and gave place to normal bowel. Its appearance was identical with that of Crohn's disease; it was so hard that it could have been a carcinoma; the presence of some adhesions to surrounding structures suggested past inflammation. No enlarged glands were found in the mesentery. The rest of the alimentary tract and other abdominal contents were entirely normal. Because of his cardiac condition the slightly increased risk of a resection or biopsy was not considered justified and a side-to-side anastomosis was carried out. He made an uneventful recovery and has had no further abdominal trouble in the two years following the operation. The stools regained their normal colour, and a recent barium progress meal was normal apart from the anastomosis, which satisfactorily by-passed the unchanged stenosed segment.

Discussion

Survival after mesenteric-artery occlusion depends on accurate diagnosis and immediate surgery, perhaps aided by postoperative anticoagulant treatment to prevent spread of the thrombus into neighbouring vessels (Murray 1939, Luke 1943, Nelson and Kremen 1950, Oden and Wallensten 1955). Diagnosis of mesenteric embolus in this patient was unavoidable because of the suddenness of onset following a coronary thrombosis ten days previously and the associated embolus in the right leg. Surgery was impossible, and the anticoagulant therapy was probably important in maintaining the viability of the gut by preventing retrograde thrombus-formation.

The sequence of pathological events here was probably as follows: the vascular injury resulted in a loop of infarcted but viable bowel where ulceration of the mucosa, assumed from the presence of occult blood in the stools, led to invasion of bacteria from the intestinal lumen and secondary infection of the bowel wall, causing a stenosing jejunitis. A similar lesion has been reported by Ginzburg and Oppenheimer (1933) after replacement of compromised but viable gut during operation for strangulated hernia. Reporting 5 such cases, they attributed the changes to permanent vascular injury affecting the intramural vessels of the bowel. Vascularisation through collateral anastomoses was, they suggested, sufficient to prevent necrosis of the muscular and fibrous layers but not to permit the usual and very active regeneration of the mucosa; thus, infection produced severe degrees of cicatricial stenosis of the intestinal lumen. All the lesions were tubular, involving the entire segment of bowel corresponding to the extent of previous strangulation. The similarity of these lesions to that seen in my patient is striking, and both were due to known vascular disturbances of the intestine. It seems that the end-result of a lesion of the bowel due to ischæmia and infection is similar to that of the non-specific granulomas of the Crohn's type.

It is tempting to speculate on the possible rôle of atheroma of the mesenteric vessels in the ætiology of intestinal disease in the older age-groups. For between the extremes of a slow symptomless obliteration of a mesenteric artery and the sudden drama of the quick occlusion, there must exist many non-fatal cases that are never recognised. Some of these episodes may account for strictures of the bowel of otherwise unknown origin, and others may result in a functional defect causing steatorrhœa. Similarly, the lesion in this patient indicates that mesenteric vascular occlusion should be considered in the differential diagnosis of Crohn's disease in the older age-groups.

Summary

Occlusion of the superior mesenteric artery led to a tubular stenosis of the jejunum, resembling Crohn's disease.

Atheroma of the mesenteric blood-vessels may be a more common cause of gastro-intestinal diseases in the older age-groups than is at present recognised.

REFERENCES

Bockus, H. L. (1947) Gastroenterology. London; vol. 2, p. 933.
Chiene, J. (1869) *J. Anat. Physiol.* **3**, 65.
Ginzburg, L., Oppenheimer, G. D. (1933) *Ann. Surg.* **98**, 1046.
Gordin, R., Laurent, L. E. (1956) *Acta med. scand.* **154**, 267.
Klein, E. (1921) *Surg. Gynec. Obstet.* **33**, 385.
Lancet (1956) ii, 297.
Luke, J. C. (1943) *Ibid.* i, 552.
Murray, G. D. W. (1939) *Brit. J. Surg.* **27**, 567.
Nelson, L. E., Kremen, A. J. (1950) *Surgery*, **28**, 819.
Oden, B. O., Wallensten, S. (1955) *Acta chir. scand.* **110**, 177.
Ortner, N. (1903) *Samml. klin. Vortr., Leipz.* no. 347; *Innere Med.* no. 102, 855.
Sauvé, L. (1910) *J. Chir.* **5**, 485.
Trotter, L. B. C. (1913) Embolism and Thrombosis of the Mesenteric Vessels. Cambridge.

Preliminary Communications

FAILURE OF "AUTOIMMUNE" ANTIBODY TO REACT WITH ANTIGEN PREPARED FROM THE INDIVIDUAL'S OWN TISSUES

THE serum of patients with certain chronic diseases exhibits complement fixation in high titre with a wide variety of human tissue antigens; this activity resides in the gamma-globulin fraction and evidence for its antibody nature has been presented (Gajdusek [1]). In two patients, one with macroglobulinæmia, J.A.M. (case 3, Mackay et al.[2]) and the other with disseminated lupus erythematosus and cirrhosis of the liver, B.E.L., extremely high serum complement-fixation titres were obtained using tissue antigens freshly obtained at necropsy. In both patients splenectomy was performed for uncontrolled hæmolysis, providing the opportunity to test the patients' sera against antigens prepared from biopsy fragments of their own tissues, including liver, spleen, and striated muscle. Sera from J.A.M. and B.E.L., together with a highly reactive "control" serum from a patient with lupoid hepatitis, M.A.G. (case 7, Mackay et al.[3]) were each tested against tissue from J.A.M., B.E.L., and from two necropsy subjects N.1 and N.2, dying of unrelated diseases. Samples of sera taken at various times were included in the tests and some irregularities were observed from one serum sample to another. Such variation has already been noted (Gajdusek [1]) and it is inevitable that a certain amount of selection of data for discussion must be made. By restricting attention to one serum sample in each case, we obtain the results shown in the accompanying table.

This table provides an unequivocal statement of a fact which seems to us to be of the highest importance—i.e., that given samples of the serum of J.A.M. and B.E.L. fail to react with emulsions of the patient's own organs, although these are effective reagents with sera from other patients with similar disease. There are two broad possibilities in regard to interpretation: (*a*) the tissue extracts contain substances capable of inhibiting reaction with homologous serum; (*b*) the tissue extracts lack deter-

1. Gajdusek, D. C. *Nature, Lond.* 1957, **179**, 666.
2. Mackay, I. R., Taft, L. I., Woods, E. F. *Brit. med. J.* 1957, i, 561.
3. Mackay, I. R., Taft, L. I., Cowling, D. C. *Lancet*, 1956, ii, 1323.

REACTIVITY BY COMPLEMENT-FIXATION TEST (GAJDUSEK[1]) OF POSITIVE SERA WITH HUMAN TISSUE ANTIGENS

Serum	Human liver antigens			
	B.E.L.	J.A.M.	N.1	N.2
B.E.L.	<4	..	500	256
J.A.M.	8000	<4	8000	16,000
M.A.G.	4000	2000	4000	2000
	Human spleen antigens			
B.E.L.	<4	..	256	256
J.A.M.	>8000	<4	2000	4000
M.A.G.	1000	2000	2000	4000
	Human muscle antigens			
B.E.L.	<4	..	1000	1000
J.A.M.	>8000	<4	4000	>8000
M.A.G.	>4000	2000	1000	>4000

minants capable of reacting with homologous serum. Alternative (*a*) is almost automatically eliminated by the existence of what appears to be perfectly normal reactivity of the extracts with heterologous sera of the same general character. An inhibitor would need to have an unbelievable specificity to function as required by the hypothesis. This leaves us with hypothesis (*b*), that the tissue extracts from the two cases from which the spleen was removed lack antigenic determinants capable of reacting with the individual's own serum.

If this is the case, the implications of the hypothesis are far-reaching. Since it seems inconceivable that the antigenic stimulus is something quite extrinsic to human cells, we must look for some process by which homologous reacting antibody is removed from the serum. Splenic enlargement plus general considerations point to the spleen as the major region where antibody could be absorbed from the plasma. If a process existed by which gamma-globulin with a wide range of reacting pattern was produced, and this population of globulin molecules was then absorbed of antibody capable of reacting with homologous determinants, the results would be as in the table. It will be recognised that such a process is quite at variance with normal immunological behaviour. When an immune serum with a wide range of reactivity is absorbed by homologous antigen, it is the rule that all heterologous reactivity is simultaneously removed. Here the serum after the hypothetical absorption in vivo retains only its *heterologous* reactivity.

It is clear that any acceptable interpretation will require the postulation of some pathological modification of the immune response which has given rise to the abnormal globulin. Working within the general framework of the Burnet-Fenner theory of antibody-production [4] we believe that the simplest approach is to postulate the occurrence of somatic mutation in a mesenchymal cell line and multiplication of descendant cells sufficiently for them to have a dominant influence on the nature of new immunological responses. The mutation (or other type of inheritable change) would need to involve:

(1) a loss of some or all of the normal complement of "recognition units" so that some body components are able to function as stimulants to the synthesis of antibody; and

(2) a failure to liberate antibody of standard pattern; in other words amongst the population of modified globulin molecules produced are many with active groups corresponding (essentially by chance) with determinants not found in the potentially antigenic components of the body.

The abnormal antibodies circulating in the plasma would be subject to absorption in the spleen or elsewhere as already described, so eliminating globulin molecules capable of reacting with the individual's own tissues.

We wish to acknowledge the generous help of Dr. T. H. Hurley, Dr. K. Grice, Mr. Grayton Brown, and Mr. Paul Jones, of the honorary medical staff of the Royal Melbourne Hospital.

IAN R. MACKAY
M.D. Melb., M.R.C.P., M.R.A.C.P.
LOIS LARKIN
F. M. BURNET
M.D. Melb., Sc.D. Camb., F.R.C.P., F.R.S.
Walter and Eliza Hall Institute, Melbourne, Australia

1. Burnet, F. M., Fenner, F. J. The Production of Antibodies. Melbourne, 1949.

FAT EMBOLISM IN CHRONIC ALCOHOLISM

THE factors underlying the neuropsychiatric disorders associated with chronic alcoholism are incompletely understood. Thus, while raised blood-ammonia levels are strongly incriminated as responsible for hepatic coma, it is recognised that these levels "often correlate poorly with the clinical condition."[1] Even more baffling are the episodes of tremulousness, hallucinations, epileptiform convulsions, and delirious states seen in inveterate inebriates.[2]

Hartroft and Ridout [3] and Hartroft [4] have described fat cysts in the livers of choline-deficient rats and alcoholics, and have shown beyond reasonable doubt that these cysts may rupture into bile canaliculi and/or vascular channels. These workers [3] mentioned that they found embolic fat in the blood-vessels of the lungs and kidneys in human cases of alcoholic fatty liver, but they gave no further details. We have applied ourselves to this study using oil red O and Mayer's hæmalum counterstaining technique on frozen sections of material fixed in buffered neutral formalin. Rigid criteria were adopted, and only definite fat emboli seen clearly to lie within blood vessels were accepted as positive. For controls, material from 250 consecutive necropsy cases was employed. This failed to show fat embolisation in either lung or kidney save in cases of bone fractures and of acute necrotising pancreatitis.[5] For the study, cases were divided into those showing fatty infiltration of the liver without cirrhosis and those showing both fatty infiltration and cirrhosis. The degree of fatty infiltration of the livers was graded 0 to 4 plus, and only those showing grade 2 or more were investigated.

Of 31 cases of alcoholic fatty liver, 22 (71%) showed fat embolisation in the lungs. Among 15 cases of alcoholic cirrhosis fat embolisation was found in the lungs of 10 (66·7%). Of 10 cases (mixed pure fatty and cirrhotic livers) in which brains were available for study fat embolism was demonstrated in the cerebra of 9. Of these 9, 3 were cases of hepatic coma; the other 6 patients died in various manifestations of acute delirium tremens. While in many of these cases the degree of embolisation was light to moderate, in approximately 25% it was extremely heavy—e.g., in 3 cm. × 2 cm. × 25 μ sections of lung of 2 cases as many as 247 and 403 discrete fat emboli were counted. These emboli measured 10–75 μ in diameter, with the majority in the 15–50 μ range.

A clinical study of cases of delirium tremens has been instituted and is still in progress. This has impressed us in that, apart from the neuropsychiatric manifestations, the most prominent feature of the cases is "chestiness"—often amounting to real dyspnœa and cyanosis. In keeping with this and with our pathological findings, we have demonstrated numerous fat globules in the sputa of

1. Leading article, *Lancet*, 1957, i, 623.
2. Harrison, T. R., Adams, R. D., Beeson, P. B., Resnik, W. H., Thorn, G. W., Wintrobe, M. M. Principles of Internal Medicine. New York, 1954; p. 781.
3. Hartroft, W. S., Ridout, J. H. *Amer. J. Path.* 1951, **27**, 951.
4. Hartroft, W. S. *Arch. Path.* 1953, **55**, 63.
5. Lynch, M. J. G. *Arch. intern. Med.* 1954, **94**, 709.

10 out of 12 cases of delirium tremens. Furthermore, where these cases were followed, the number of fat globules in the sputum gradually declined until fat was absent from the sputum shortly before full clinical recovery.

While our results are not put forward as an all-embracing solution to the neuropsychiatric manifestations of chronic alcoholism, we feel that they may help to explain delirium tremens, and may have a bearing on those cases of hepatic coma in which the biochemical upset is not sufficient to account for the severe impairment of consciousness.

MATTHEW J. G. LYNCH
M.B. N.U.I., M.R.C.P. Lond.
STANLEY S. RAPHAEL
M.B. Lond.
THOMAS P. DIXON
M.D. Toronto

Departments of Pathology and Psychiatry, General Hospital, Sudbury, Ontario, Canada

Medical Societies

BRITISH DIABETIC ASSOCIATION

Banting Memorial Meeting

THE 11th Banting memorial meeting of the British Diabetic Association was held in Oxford on July 12 and 13.

With one exception the five contributors of the first morning's papers came from Oxford and they dealt with aspects of diabetes other than its treatment, to which most of the remaining papers were devoted. Dr. D. A. PYKE analysed what is known about the weight of diabetics in relation to normals, giving data of his own obtained under stricter conditions than has usually been the case in published work. Lack of suitable information on controls was a serious handicap, but Dr. Pyke concluded that diabetics as a group, both male and female, were heavier than non-diabetics and that diabetic women tended to gain weight rather earlier than diabetic men. The spread around the mean weight was much greater in normal women than in normal men, thus increasing the difficulty of assessing whether women diabetics were overweight or underweight.

Dr. HARRY KEEN (London) reported a study of over 1200 near-relatives of diabetics. The relatives were given a screening test for glycosuria one hour after taking 50 g. of glucose by mouth, and about a quarter of them had glycosuria. The positive reactors were then subjected to full glucose-tolerance tests. Apart from clearly normal and clearly diabetic glucose-tolerance curves, a number of intermediate ones were found. These too were commoner in the relatives of diabetics. The theory of multifactorial inheritance seemed to suit the genetics of diabetes better than simpler theories.

Dr. R. B. FISHER described his work on the mechanism of the action of insulin, using the perfused rat heart, in which there is a more intimate contact between the insulin or other hormones and the muscle cells than in rat-diaphragm assays. Levine's work on the permeation of galactose and glucose into cells under the influence of insulin was confirmed in the rat heart, and a preparation of growth hormone also appeared to act on the permeability mechanism, though he had reason to believe that there were probably three active fractions in the growth-hormone preparation.

Dr. E. H. COOPER gave an account of the abnormalities of sudomotor and pilomotor innervation in a group of diabetics. Such abnormalities were found even in the absence of clinical evidence of diabetic neuropathy, and appeared to be due to a lesion at the postganglionic level.

Dr. I. BUSH reviewed critically the rôle of the adrenal cortex in diabetes, and warned against the overfacile acceptance of the importance of the adrenal steroids in many aspects of diabetes. He believed that increased adrenal cortical activity occurred late in diabetic ketosis and probably also in patients with Kimmelstiel-Wilson syndrome. The fact that the glucocorticoids tended to protect against the development of ketosis was evidence against their playing a rôle in the initiation of diabetic ketosis.

ACTION OF INSULIN

In the 10th Banting memorial lecture Prof. H. A. KREBS discussed the action of insulin. The fact that glucose accumulated in the blood of the untreated diabetic suggested that there was a block in its next stage of metabolism to glucose-6-phosphate under the influence of hexokinase. The Coris produced some early evidence to favour this hypothesis under rather special circumstances, but now even the Coris themselves regard this possible site of action as much less important than one on the permeability of glucose into the cell—a necessary preliminary for hexokinase to become associated with glucose. The mechanism of the transfer of the glucose across the cell membrane is obscure, but Professor Krebs drew on the field of microbiology to provide ideas on this subject. He cited some of Monod's work on the adaptive enzymes of *Escherichia coli*. These may be formed in response to inducers such as lactose and β-galactosides, some of which were not themselves substrates for that particular enzyme. They may therefore be actively transferred across the cell membrane without undergoing a chemical change in a way possibly analogous to that of the transfer of glucose under the influence of insulin, which Professor Krebs regarded as a component of a glucose-transfer mechanism. A further illustration from microbiology was B. D. Davies's work showing how citrate could favour the synthesis of proteins from amino-acids by aerobacter. Professor Krebs clung to the working hypothesis that insulin had only one main action—namely, that on cell-transfer mechanisms—but he admitted that he could not thus explain his own findings on oxidation in avian muscle. He referred also to Soskin and Levine's hypothesis that the hyperglycæmia of diabetes was a compensatory phenomenon rather than an indication of a primary disturbance. He concluded his lecture with a tribute to the memory of Sir Frederick Banting.

SULPHONYLUREAS

The rest of the meeting was devoted to ten communications on different aspects of the sulphonylureas.

Dr. R. F. MAHLER (Dundee) described some basic pharmacological studies on carbutamide and tolbutamide and demonstrated the much longer persistence of carbutamide in the body. Both compounds appeared to be distributed in a space equivalent to the extracellular fluid volume. There was no evidence that they were concentrated in the liver of the rat. A fairly high proportion of plasma-tolbutamide had been shown to be in the form of its carboxylated metabolite, which is not active in inducing hypoglycæmia.

Dr. G. A. STEWART, of Burroughs Wellcome, described a pharmacological study of carbutamide and tolbutamide in guineapigs. These compounds, unlike insulin, did not reduce the insulin content of the pancreas, and both could be shown to exert a hyperglycæmic action if given in large enough doses. Dr. JOYCE BAIRD (Edinburgh) confirmed that there was an optimal dose level of tolbutamide in man to produce hypoglycæmia, and she had found that plasma concentrations of 8–18 mg. per 100 ml. were the most active therapeutically, there being fairly wide individual variations. A comparison of the hypoglycæmic response to a single daily dose of carbutamide with that of tolbutamide showed clearly how relatively transient was the effect of tolbutamide, which should therefore be given three or even four times

day in some patients. Dr. Baird concluded that about a quarter of all diabetics at present taking insulin in the Edinburgh clinic could be well controlled on tolbutamide instead.

Rather similar clinical results on a smaller series of diabetics were reported by Dr. J. D. N. NABARRO (London). He drew attention to a delayed response to tolbutamide in a few diabetics, and indicated that the response of some diabetics lessened as they gained weight. Like Dr. Duncan and Dr. Baird, he had studied some apparently suitable diabetics who were found to be resistant to the hypoglycæmic action of both carbutamide and tolbutamide. Dr. F. W. WOLFF (London) considered that the optimal daily dose of tolbutamide in man was about 3 g. He felt that insulin-antagonists in the blood of some insulin-dependent diabetics might also antagonise the hypoglycæmic action of the sulphonylureas.

Dr. MICHAEL DULAKE (London) reviewed the experience at King's College Hospital in the use of these oral hypoglycæmic agents on nearly 150 patients. It was of interest that the white blood cell count more often rose than fell when patients were taking tolbutamide—a result rather different from that obtained in the Edinburgh clinic. The findings of Dr. ARNOLD BLOOM (London) indicated an apparently longer-lasting effect of a single daily dose of tolbutamide than had been reported by Dr. Baird. In all his failures on tolbutamide treatment there had been some ketosis by Rothera's urine test in preceding control period. Intermittent tolbutamide treatment was often effective in controlling the diabetes, and when relapses in control occurred they almost invariably responded to a further course of tolbutamide. Such remissions, lasting on the average about 24 days, were reported by Dr. IAN WANG (Glasgow). He thought it probable that remissions following tolbutamide were rather shorter than those following carbutamide treatment.

Dr. J. M. STOWERS (Dundee) described a study of the action of the sulphonylureas on a series of stable responsive diabetics and on a contrasting group of brittle diabetics who continued to take insulin. He reviewed possible mechanisms of action of these drugs in relation to data bearing on such mechanisms in stable and brittle diabetics, and he concluded that the main action of these hypoglycæmic agents was to reduce the output of glucose from the liver.

The final paper was a review by Prof. C. H. BEST (Toronto) of our knowledge of the mode of action of sulphonylureas, mainly derived from work on experimental animals. It was evident that no one explanation could fit all the data, but there was unequivocal evidence of increased insulin production under some conditions and of decreased glucose output from the liver, which was associated in dogs with severe liver injury. In man the predominant measurable effect was a decreased output of glucose from the liver, although there might well be a small stimulation of insulin secretion as well.

Reviews of Books

Vitamin A

THOMAS MOORE, SC.D., deputy director, Dunn Nutritional Laboratory, Cambridge. London: Cleaver Hume Press. 1957. Pp. 645. 76s.

FEW men are so well qualified as Dr. Moore to write a book on vitamin A, for he has spent nearly 30 years working on the subject, abstracting the literature and thinking about it. And few could have done it so well.

After a short historical introduction, the book deals with the estimation, chemistry, natural history, physiological activity, and the pathological aspects of a deficiency or excess. There is a special section on man, and a very interesting hundred pages on the importance of the vitamin in farm animals, sexual reproduction, and the function of the thyroid, and on other selected subjects. The interaction with the carotinoids is clearly set out. There is a valuable appendix on the preparation of deficient diets, and on techniques for determining the vitamin and carotinoids.

By never allowing his presentation to degenerate into the string of references and summaries so common today, Dr. Moore has produced a very readable book in which each sentence is clearly the product of practical experience and well-digested thought. No-one interested in vision, neurology, bone, skin, nutrition, or animal husbandry should miss it. Is it too much to hope that the author and his publishers will do as much for vitamin E?

Physiology of Nerve Cells

J. C. ECCLES, professor of physiology, Australian National University, Canberra. Baltimore: Johns Hopkins Press. London: Oxford University Press. 1957. Pp. 238. 30s.

THIS book is an expansion of Professor Eccles's three Herter lectures.

The first was concerned with the electrical changes observable by intracellular recording during excitation of spinal motor nerve-cells in the anterior horn of the cat's spinal cord. The author's work in this field is summarised against a useful background account of the problems of microelectrode technique and the electrochemical factors involved in the interpretation of membrane potentials.

The second main topic—the electrical events associated with inhibition of a motor neurone—is treated in a rather more individualistic way, almost inevitably since work on analogous systems and by other workers is exceedingly scanty. The ionic basis for the hyperpolarisation of the neuronal membrane, which has been shown by Eccles to arise when inhibition is in progress, is analysed in relation to data obtained by modifying the internal composition of the cell electrophoretically.

The final chapters deal mainly with the pathway involved within the spinal cord in mediating the inhibitory component of reciprocal innervation and other inhibitory responses, and reasons are advanced for postulating internuncial inhibitory relays; in this context, the general question of the rôle of chemical transmitters in the central nervous system also comes under discussion.

Professor Eccles writes in a direct and persuasive style which enables him to skate at times on flimsy ice, but his exposition in modern terms of the Sherringtonian concepts of central excitatory and central inhibitory states commands respectful attention and makes enthralling reading. Though his book is rather heavy going for those not accustomed to oscillographic records and circuit diagrams, it will be widely read by students of physiology and should be read by anyone interested in the working of the central nervous system.

The Recovery Room

MAX S. SADOVE, M.D., professor of surgery (anesthesiology), JAMES H. CROSS, M.D., clinical assistant in surgery, University of Illinois College of Medicine. Philadelphia and London: W. B. Saunders. 1956. Pp. 597. 84s.

RECOVERY-ROOMS and special-treatment rooms are appearing in many centres in America, and in increasing numbers in this country. Fears have been expressed that specialisation of this kind, particularly in hospitals where training is an important consideration, can be carried too far. For one thing, matrons may find it impossible to let every nurse-in-training spend some time in a recovery-room, and she may thereby lose vital experience in the care and resuscitation of the unconscious patient which she at present gains on the wards. Again, should a recovery-room dressership be added to the clinical programme for medical students?

In this book almost all the possible postoperative complications and routine procedures are covered, and covered very well: it is comprehensive rather than handy. The detailed consideration of such subjects as shock and fluid replacement suggests that the recovery-

room is as valuable to the preoperative as to the post-operative case. In places the recovery-room is referred to as the "intensive therapy" room, and it is held (particularly in the first two chapters) that not only the surgical block may need its services. As well as chapters for neurosurgery, ophthalmology, gynæcology, chest surgery, and pædiatrics, there is advice on diabetic coma, acute myocardial infarction, poisoning, tetanus, and so on. A case may be made out for siteing the recovery-room in the receiving-rooms, or for sending severely shocked or acutely ill patients direct to this part of the hospital as soon as they are admitted.

In this country most of what has been written about recovery-rooms[1 2] has come from the anæsthetists. It is not clear how recovery-rooms with the responsibilities allotted to them by this book would work in British hospitals. General surgeons, burns units, casualty departments, and accident services may lay equal claims to the territory, and one can only suggest that all interested parties should read the book with discrimination. But they should read it.

Röntgendiagnostik

Ergebnisse 1952–56. Editors: Prof. H. R. SCHINZ, Prof. R. GLAUNER, Prof. E. UEHLINGER. Stuttgart: Thieme. 1957. Pp. 590. DM. 139.

WITH a large team of contributors, the editors have produced a detailed survey of certain recent advances in radiology. Much of the book is devoted to angiocardiography, vertebral and peripheral arteriography, and venography. In other sections experiences with sodium iodipamide ('Biligrafin') are fully described, and techniques for the production of mediastinal emphysema in the diagnosis of intrathoracic lesions are discussed. The authors' views largely conform with those of radiologists in this country. The illustrations and radiographs are of an exceptional quality.

Halsted of Johns Hopkins

The Man and his Men. SAMUEL JAMES CROWE, M.D., professor emeritus of laryngology and otology, Johns Hopkins University, Baltimore, Maryland. Springfield, Ill.: Charles C. Thomas. Oxford: Blackwell Scientific Publications. 1957. Pp. 247. 37*s.* 6*d.*

THIS history of the department of surgery and its divisions at Johns Hopkins Hospital during the time that William Stewart Halsted was professor of surgery and surgeon-in-chief is written by the man who knew him best. As well as having professional and scientific contacts, Professor Crowe was in close social touch with Halsted and he has been intimately acquainted with those who have carried on the Halsted tradition.

The story begins with the foundation of the hospital, and there follow short biographies of Halsted, Cushing, Dandy, Mitchell, Young, Baer, Baetjer, and the author. The remaining chapters deal with thyroid and parathyroid studies, experiments on intestinal suture, aneurysms, and vascular surgery, and the surgery of the bile passages.

Halsted was a courageous man: in 1881, when his sister collapsed from post-partum hæmorrhage, he drew blood from one of his own veins and injected it immediately into hers. It was a great risk, but she was moribund and it saved her life. A year later when he was thirty his mother was critically ill. Famous consultants had failed to advise operation, though she was jaundiced with great tenderness over the gall-bladder. Halsted incised the gall-bladder, removed several stones, and the patient recovered—it was his first gall-stone operation. His confidence in his abilities was based on a profound knowledge of anatomy and a clear understanding of the general principles of surgery.

He was also a man of vision who developed surgery by choosing a man of promise, assigning him a specialty, and telling him to advance along lines that were often new and unorthodox.

This stimulating story of some of the great figures in American surgery and one of her most famous hospitals will interest surgeons everywhere.

1. Davies, R. M., Hunter, J. T. *Lancet*, 1952, i, 865.
2. Jolly, C., Lee, J. A. *Anæsthesia*, 1957, **12**, 49.

Operative Surgery (Vol. 3. *Rectum and Anus, Thoracæ.* London: Butterworth. 1957. Pp. 215. £5 10*s.*).—This addition to the work edited by Prof. Charles Rob and Mr. Rodney Smith may be regarded as the thoracic volume, though the abdomen, previously almost completed in the second volume, is here concluded with an account of operations on the anus and rectum. Thoracic endoscopy and operations on the chest wall, lungs, mediastinum, heart, and great vessels are comprehensively considered.

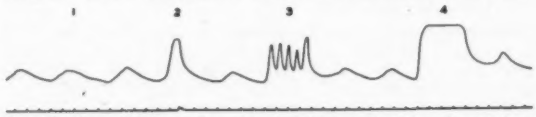
Treatment of High Blood Pressure (The Royal College of Physicians of Edinburgh. 1956. 3*s.* 6*d.*).—This monograph is the substance of the George Alexander Gibson lecture delivered by Prof. F. H. Smirk in Edinburgh last year and it describes in detail the methods he uses in New Zealand for the treatment of hypertension. His wide experience makes him one of the leading authorities on the use of ganglion-blocking agents. There is a careful account of the use of rauwolfia alkaloids in conjunction with either the hexamethonium compounds or the newer mecamylamine ('Inversine') or chlorisondamine chloride ('Ecolid').

New Inventions

AN ELASTIC BAND FOR RECORDING RESPIRATIONS

WHEN a band of conductive rubber is stretched, its electrical resistance increases. This effect seemed to offer a simple means of registering respiratory movements, which has been found to give good results. As a transducer, the elastic band provides a large electrical variation for a small dimensional change; it is easily applied and is unobtrusive.

The prototype consisted of a conductive rubber band 0·06 in. thick, 0·5 in. wide, and 20 in. long. The two ends were riveted between small metal plates to tapes of 1 in. width, and garter fixtures provided the means for fastening the tapes round the chest and for adjusting the length. The metal plates acted as terminals. The band



Record of respiration: 1, quiet breathing; 2, sigh; 3, panting; 4, deep breath.

was connected in one arm of a Wheatstone bridge, the output of which was taken to one of the direct-current amplifiers of an electro-encephalograph.

Measurements with an ohmmeter showed that the resistance of the unstretched band was about 100,000 ohms. This figure was doubled by stretching the band by less than 3%, and a similar additional stretch caused the resistance to rise to more than three times the initial value. The relationship between change in length and change in resistance was found to be approximately linear, and it was estimated that the resistance increased by about 10,000 ohms per millimetre of stretch. The maximum resistance was more than ten times the initial value, and it was attained when the band was stretched to about 23 in.—i.e., by an increase in length of 15%. Thereafter a slight decrease in resistance was seen as the band was pulled to its limit.

The increase in resistance on stretching the material appeared to be synchronous with the dimensional change; but when the band was quickly released, the resistance declined more slowly. This was most evident after a full stretch, and it was found to be associated with a corresponding distortion of the material, which did not resume its former shape immediately. This effect seemed to be no disadvantage in practice, and the transducer was able to follow the most rapid respirations.

The conductive rubber was provided by courtesy of Dr. L. R. Ridgway, managing director of Phillips Rubbers Ltd., Bromley Street, Manchester, 4, to whom I wish to express my thanks. I am also indebted to the physician-superintendent, Dr. R. Ström-Olsen, for permission to publish this note.

J. D. MONTAGU
M.R.C.S.
Mental Health Research Fund Fellow
Runwell Hospital,
Wickford, Essex

'DELTASTAB'
(*Prednisolone*)

'HYDROCORTISTAB'
(*Hydrocortisone*)

'HYDROMYCIN'
(*Hydrocortisone with Neomycin*)

'CORTISTAB'
(*Cortisone Acetate*)-

PREDNISONE
—BOOTS

Boots

All-British Corticosteroids

are manufactured in Nottingham in the most up-to-date plant in Europe. A comprehensive range of preparations is available to meet all therapeutic requirements.

NOW-

'Deltastab-B'

Tablets of prednisolone 5 mg. buffered with aluminium hydroxide gel and magnesium trisilicate.
The price of Deltastab-B is the same as ordinary prednisolone.
Supplied in bottles of 30, 100 and 500 tablets.

Literature and further information gladly sent on request
BOOTS PURE DRUG COMPANY LIMITED, NOTTINGHAM, ENGLAND

Boots

6183

when enteritis is the result

GUANIMYCIN

will provide the specific 24 hour treatment

The summer months provide conditions suitable for the multiplication of bacteria on contaminated food and for the spread of contamination by flies and other insect vectors; it is then that epidemics of bacterial food poisoning, bacillary dysentery and summer diarrhœa of infants are most frequent and widespread.

The organisms commonly responsible for such conditions are responsive to the combined therapy of streptomycin and sulphaguanidine, both of which are present in Guanimycin.

Guanimycin rapidly controls symptoms and restores well-being. It reduces the duration of illness and it will considerably reduce the convalescent carrier rate.

When diluted to 4 fluid ounces with water, each fluid ounce contains streptomycin sulphate 0·25 gramme and sulphaguanidine 2 grammes.

In bottles to prepare 4 fluid ounces of suspension.

C57/396-7/H

ALLEN & HANBURYS LTD. · LONDON · E·2

TELEPHONE: BISHOPSGATE 3201 (12 LINES). TELEGRAMS: "GREENBURYS, BETH, LONDON."

THE LANCET

LONDON: SATURDAY, JULY 20, 1957

Bone-marrow for Treatment of Leukæmia

SOME months ago BARNES et al.,[1] working at Harwell, suggested that bone-marrow transplants could be used to render normal the bone-marrow of an animal with a transplanted leukæmia. Such a suggestion had been made before, and more understandably applied to aplastic anæmia as well; but the present work has much experimental support. It is a commonplace of experimental transplantation of tumours and leukæmias that a reasonable proportion of successful transplants can be assured by giving the test animal a dose of whole-body radiation sufficient to destroy its "resistance." JACOBSON et al.[2] and COLE et al.[3] had shown that death of rats exposed to an otherwise fatal dose of whole-body irradiation can be prevented by preparations of rat bone-marrow or spleen. CONGDON and LORENZ [4] found that a single intravenous injection of *rat* bone-marrow significantly increased the survival of irradiated *mice*, and the survival was accompanied by regeneration of the bone-marrow. Unfortunately many of the animals died, three to four weeks after irradiation, from what CONGDON and LORENZ called a "delayed immunological response of the host." This effect of marrow injections was attributed to hormone action; and COLE et al.[3] showed that cortisone apparently enhanced it. But last year results by two different methods showed that it was the transplanted marrow cells that were regenerating, and not the "stimulated" marrow cells of the host.

FORD and HAMERTON [5] used as donors of bone-marrow mice with an atypical "marked" chromosome. When the irradiated host mice survived after an injection of marrow from these donors, the cells of the regenerated mouse-marrow contained the atypical chromosome, thus indicating that the repopulation was from the donor's marrow. NOWELL et al.[6] made use of the discovery that, whereas rat leucocytes give a strongly positive histochemical reaction for alkaline phosphatase, mouse leucocytes give a negative reaction; they used this "marker" to study the fate of *rat* marrow cells injected intravenously into irradiated mice. Suitable mice were given a lethal dose (810r) of whole-body X rays; an hour later they received a single injection of rat bone-marrow equivalent to 70 mg. wet weight. The total cells in the marrow fell as usual to a low level of about 5% on the fourth day. But phosphatase-positive cells appeared in the marrow within two hours, and when, on the seventh day, regeneration of the marrow began, about 80% of the cells were phosphatase-positive—i.e., they were rat cells. After twenty-one days deaths began to occur from the odd reaction previously noted, but in those animals that survived beyond thirty days the phosphatase-positive rat cells were being replaced by phosphatase-negative cells that were presumably from the mouse's own recovering tissues. Irradiated mice which received no marrow all died within eleven days, and no phosphatase-positive cells appeared in their marrow. In mice which were given an injection of rat marrow, but were not previously irradiated, all phosphatase-positive cells had disappeared within seven days. NOWELL et al. also gave irradiated mice similar injections of *mouse* marrow and found that the animals mostly survived the twenty-eight-day period and their marrow eventually regenerated completely. These researches, then, showed that the survival of irradiated animals after marrow injections is brought about by proliferation of the injected marrow cells which, at least for a time, tide over the animal until its own marrow recovers. It is clear that homologous marrow gives the best results; injections of heterologous marrow are liable to be followed after an interval by a reaction which commonly is fatal. The Harwell group [1] took this work a step further. They argued that if leukæmic mice were given a dose of X rays sufficient to destroy the bone-marrow, an injection of normal homologous bone-marrow might lead to the repopulation of the marrow with normal cells. They used a suitably inbred pure strain of mice to which a form of lymphatic leukæmia was transmitted by injection of leukæmic cells. A week after the leukæmic injection the animals were given a dose of whole-body X-irradiation equal to 1500 rad over a period of twenty-five hours. Such a dose is normally lethal, but when the animals were given an intravenous injection of bone-marrow from mice *of the same strain* (isologous marrow) 25 out of 35 survived for at least three months; those that did not survive apparently succumbed to a return of the leukæmia. The use of marrow from mice of another strain (homologous marrow) was not so successful because, although the animals survived the post-irradiation period, they succumbed to unexpected wasting and diarrhœa.

The importance of this work is that it may possibly offer a different approach to the treatment of leukæmia; as Dr. LOUTIT and his colleagues [1] put it: "if the experience of several laboratories could be pooled, some general laws might be evolved which should help in planning an extrapolation from mouse to man for the treatment of those types of leukæmia which are so rapidly fatal as to warrant the use of desperate measures." The application of a lethal dose of X-irradiation as a first step in a scheme of therapy would indeed be a desperate measure. The same effect may be obtained by less desperate means. HERBUT and KRAEMER [7] have been exploring the importance of the "properdin" system in this matter of "resistance." They were working on the conditions necessary for transferring a human cancer to rodents and had shown [8] that transfer could succeed in weanling rats previously irradiated and given cortisone; cortisone destroys lymphocytes, irradiation destroys lymphocytes and "resistance." HERBUT and KRAEMER recalled that in 1953 KIDD [9] demonstrated in guinea-pig serum a "protein" that caused regression of implanted lymphoid tumours in mice, and they

1. Barnes, D. W. H., Corp, M. J., Loutit, J. F., Neal, F. E. *Brit. med. J.* 1956, ii, 626.
2. Jacobson, L. O., Simmons, E. L., Marks, E. K., Elbridge, J. *Science*, 1951, **113**, 510.
3. Cole, L. J., Habermeyer, J. G., Bond, V. P. *J. nat. Cancer Inst.* 1955, **16**, 1.
4. Congdon, C. G., Lorenz, E. *Amer. J. Physiol.* 1954, **176**, 297.
5. Ford, C. E., Hamerton, J. L. *Nature, Lond.* 1956, **177**, 452.
6. Nowell, P. C., Cole, L. J., Habermeyer, J. G., Roan, P. L. *Cancer Res.* 1956, **16**, 258.
7. Herbut, P. A., Kraemer, W. H. *Ibid*, p. 1048.
8. Herbut, P. A., Kraemer, W. H. *Ibid*, p. 408.
9. Kidd, J. G. *J. exp. Med.* 1953, **98**, 565, 583.

thought the protein might be properdin. Properdin, isolated by PILLEMER et al.[10] in 1954, is a serum-euglobulin that, in the presence of complement and ionised magnesium, destroys bacteria, neutralises viruses, and lyses erythrocytes, and is itself readily destroyed by whole-body irradiation. A very odd finding has been that zymosan, an insoluble carbohydrate complex derived from yeast-cell walls, combines with properdin in vivo and in vitro,[11] so that, by giving intravenous injections of zymosan, properdin activity can be reduced to a low level. HERBUT and KRAEMER found that preliminary zymosan injections did, in fact, produce a good proportion of "takes," though not as good as whole-body irradiation. Here, then, is a possible alternative to lethal doses of X rays.

Nothing like the genetic homogeneity of experimental mice is found in man, and the discouraging experience of the Harwell group with "homologous" marrow warns us of what we may expect when transplantation of human marrow is attempted, even if marrow solely from donors of the same blood-groups—at least the same ABO and Rh groups—are used. Nevertheless the subject is being pursued since it may point the way to an alternative to the present, mostly destructive, therapy used in leukæmia.

Attack on Anoxia

IN this country's ageing and predominantly urban population a growing number of people are being afflicted by chronic asphyxia due to emphysema, itself largely the result of the formidable incidence of chronic bronchitis. In an article in the opening pages of this issue Dr. SIMPSON discusses the clinical and pathological aspects of oxygen lack in emphysema, and he points out how it can affect all the tissues of the body. He shows too how narrow is the margin between the chronically asphyxiated patient who nevertheless is able to cope with a limited amount of activity, and the bedridden respiratory wreck whose short future consists in a hopeless struggle to breathe. Dr. SIMPSON has based his findings on a close clinical and laboratory study of nearly 200 emphysematous patients who have come under his care in hospital, and much of what he has to say is of immediate practical importance.

Emphysema is the commonest cause of oxygen lack. Most doctors must at some time have felt how feeble were all their efforts to alleviate its symptoms or arrest its progress; and this feeling is often heightened by the courage of the sufferer and his patent hope that the doctor can help him. In this despondent mood, there is a danger of forgetting the importance of even simple measures which can do something to correct oxygen lack. As a first step, early diagnosis is essential; obvious cyanosis is a sign of gross oxygen deficiency and it is not a reliable indication of when to start corrective treatment. From a long series of measurements of arterial blood gases in patients with cyanosis, LUNDSGAARD and VAN SLYKE[12] concluded that each 100 ml. of arterial blood must contain at least 5 g. of reduced hæmoglobin before cyanosis can always be recognised; few clinicians would today entirely agree with this conclusion, because it has also been found that individuals vary greatly in their ability to detect subtle changes in the depth of the cyanotic tint. A good practical rule is to assume that an emphysematous patient who is breathless is always more or less short of oxygen, though he may not be in need of oxygen therapy. Treatment at this stage is directed primarily towards combating bronchial infection and bronchial spasm, which interferes with proper ventilation of the lungs. Any acute bronchitis must therefore be treated vigorously with the appropriate antibiotic in *effective* doses. Samples of sputum must be examined bacteriologically and the report should include the sensitivity of the pathogens to the common antibiotics. There is no harm, however, in giving penicillin in doses of 1 million units a day for a week by injection, pending the report. The patient should not go back to work without a proper period of convalescence. Such treatment given early may prevent the establishment of the chronic infection which favours progressive lung damage. Those patients who show signs of persistent bronchiolar obstruction should be encouraged to use a pocket nebuliser for the self-administration of a bronchial relaxant solution, such as 1% ephedrine or isoprenaline. Deep slow breathing improves pulmonary ventilation and helps to ward off both anoxia and carbon-dioxide retention; and a course of breathing exercises often brings benefit out of all proportion to their measurable physical effect. Activity should not be curtailed explicitly, but excessive fatigue and unnecessary exposure to extremes of climate must be avoided. Cigarette-smoking should be shunned altogether or cut down to a minimum.

Where disability is serious, cyanosis becomes manifest and oxygen therapy is necessary from time to time. The patient can take oxygen at home through a B.L.B. mask from an oxygen cylinder or he can use a portable oxygen apparatus, such as that described by COTES and GILSON,[13] whenever he must do something which makes him very short of breath (but not all patients will accept this valuable form of treatment, because they feel conspicuous and self-conscious). Although the effect of long-continued use of this method of oxygen treatment has not yet been assessed, there is no doubt whatever that patients feel better for it and can do much more than they otherwise could. Later in the disease, acute exacerbations of bronchitis can be treated adequately only in hospital. At this stage carbon-dioxide retention must be taken into account in the management of oxygen therapy—a matter which Dr. SIMPSON discusses fully. It is worth reiterating, however, that the paramount need of these patients is for oxygen, even in face of the risk of inducing carbon-dioxide narcosis.

Finally, warning may be needed about the administration of narcotics to emphysematous patients during an acute chest infection. Their asphyxia often induces a state of mania, and morphine may seem a good drug to secure rest for the patient or his relatives. But it may well hasten the patient's end by depressing his already ineffective respiratory

10. Pillemer, L., Blum, L., Lepow, I. H., Ross, O. A., Todd, E. W., Wardlaw, A. C. *Science*, 1954, **120**, 279. See *Lancet*, 1954, ii, 587.
11. Pillemer, L., Schoenberg, M. D., Blum, L., Wurz, L. *Science*, 1955, **122**, 545.
12. Lundsgaard, C., Van Slyke, D. D. *Medicine, Baltimore*, 1923, **2**, 1.
13. Cotes, J. E., Gilson, J. *Lancet*, 1956, i, 872.

efforts. Only in hospital, where adequate methods of artificial respiration are available, should powerful narcotics be used; and they are in fact seldom needed when oxygen therapy is properly managed.

Unity

MUCH may be forgiven impetuous speakers at annual conferences, but last week the British Medical Association's representative body went too far. The discovery of scapegoats is always comforting, but real harm may be done if the new myths about the Royal College of Physicians and its late president are propagated further.

The first fact that needs to be made plain is that, though the B.M.A. represents the majority of general practitioners, it does not yet represent the majority of consultants and specialists, many of whom prefer their colleges to speak for them in all negotiations with the Government. Opinion is divided in that some consultants would now like to see all medico-political matters handled by the B.M.A., while others think it would be unwise to entrust arrangements for the whole profession to a body which by tradition is primarily interested in the family doctor. In his seven years as president of the College of Physicians, Sir RUSSELL BRAIN took the constructive middle course of developing coöperation with the association, in the hope that growing confidence may eventually enable the colleges, under new arrangements, to hand over to it much of their responsibility in matters of "bread and butter." His consistent effort to promote unity in the profession has been seen in his chairmanship of the Joint Consultants Committee, formed by the colleges and the B.M.A. "to speak for consultants with one voice," and in his co-chairmanship with Dr. TALBOT ROGERS of the Joint Negotiating Committee which last year presented the pay-claim to the Government. That claim was largely drafted by the B.M.A., and some people thought that it should have been rather different in tone; but Sir RUSSELL'S leadership in this affair was accepted by consultants, and the claim went forward on behalf of the whole profession—a novel and notable achievement.

No similar agreement, however, had been reached—or even sought—on what should be done if the Government rejected the claim; and, when rejection became probable, many consultants were annoyed to find it assumed, in the newspapers and elsewhere, that this important tactical decision was to be made by the B.M.A. alone. This assumption, which assigned to the colleges the rôle of satellites, was so far from the truth that it required immediate correction; and on Jan. 2 Sir RUSSELL BRAIN corrected it in the following letter in *The Times*:

> Sir,—In your issue of December 28 you speak of "the British Medical Association's dispute with the Ministry of Health over the pay of the medical profession" and of "the association's negotiating committee." To prevent misunderstanding may I point out that this negotiating committee is not a committee of the British Medical Association? Hence in the event of the negotiations with the Ministers breaking down the decision as to what action should be taken will not be made by the British Medical Association alone, but also by the other bodies which are represented on this negotiating committee.

For evidence that misunderstanding existed widely one need look no farther than the B.M.A. yearbook for 1956–57, which without qualification describes the Joint Negotiating Committee as "formed by" the two committees of the association which deal with practitioners and with consultants. On the other hand, of course, all the people taking part in the negotiations (including the Government) were perfectly well aware that the Joint Negotiating Committee had been established simply (as the yearbook correctly puts it) "to prepare and present a claim," and that its existence did not bind its constituent bodies to unite in subsequent action. Hence there is no substance in the accusation that Sir RUSSELL was disloyal to the Joint Negotiating Committee because his letter (in the reported words of a critic) "let it be known that he was in a position to act apart from the committee." We can only suppose that the representative body, when it saw fit to pass what one member described as a vote of censure on Sir RUSSELL, was as confused about the facts as was the special correspondent of the *Manchester Guardian* who, on July 12, after referring to "Sir Russell's independent action as a negotiator during pay discussions between the association [*sic*] and the Government at the turn of the year," wrote:

> "From the way the meeting reacted it seemed that there would be little sympathy for any member of the B.M.A. Joint Negotiating Committee who, in the future, dabbled in some private negotiation without previous consent from the entire committee."

The rather different conclusion we should ourselves draw from this episode concerns the hazards of attempting symbiosis with an organism so large and insensitive that it tends to absorb whatever it touches.

The charge against the Royal College of Physicians (which has at any rate a rational basis) is that when the Joint Negotiating Committee had dissolved, and the B.M.A. was planning to bring political pressure on the Government through phased withdrawal from the National Health Service, the college broke the unity of the profession by saying that it would give evidence to the Royal Commission. As there had been no agreement governing tactics, and as the B.M.A., without consulting its associates, had already three times altered the situation by its tactical actions—viz., the establishment of the Medical Guild, the launching of the withdrawal scheme, and the council's decision in favour of boycotting the commission—the college was clearly within its rights in deciding and announcing its own policy. But unquestionably its announcement did in fact make it harder for the B.M.A. to pursue its dangerous course; and members of the association not unreasonably ask why the opinions of a small self-perpetuating body of antique constitution should carry any weight at all against those of a modern democratic organisation directly representing all the 70,000 doctors who belong to it.

The reason why the college speaks with more authority, and the B.M.A. with rather less, than one would expect from their sizes is that the college is in fact a better means of expressing medical opinion than it appears, while the association is decidedly less perfect in practice than it is in theory. In elections to the college the word "physician" is interpreted liberally, and the 850 fellows entitled to attend its governing body or comitia are people with experience and responsibilities in many kinds of medical work. Having elected their president, they

leave him wide discretion; but they all have easy personal access to him and he cannot act without being sure of their general support. Naturally, on major issues the comitia must declare its policy formally, and its decision of April 11 in favour of giving evidence to the Royal Commission was reached without dissentient vote in a meeting of over 100 fellows. Though those present were not voting on the instructions of constituents, their decision must have taken account of the general opinion of the people with whom they worked—as was indeed apparent when the other Royal Colleges also expressed their intention of giving evidence to the commission. The truth is that, in times of strain, decisions are, on the whole, more likely to be taken objectively, with full attention to the public interest, by a group of responsible people voting as individuals than by a group of representatives who have to act on resolutions from below. Moreover, the representative cannot always be sure that such resolutions accurately reflect the views of his constituency; for the constituents who elect him and give him his orders are sometimes no more than an energetic minority.

The great advantages of democratic methods of representation should not blind us to these disadvantages, and the second of them applies conspicuously to the B.M.A. People belong to the association for many different reasons—because it is so useful to them; because it does much invaluable work for medicine; or because they believe in professional unity and hope that, given support, the association will one day develop into a fully representative organisation, satisfying every kind of doctor. As might be expected from the variety of their motives in joining, a substantial proportion of the members do not want to take part in medico-political activities, and seldom rise to the surface of their silent pool. When, as recently, the behaviour of a Government engenders emotion even among the more deeply submerged, attendances at meetings become impressive and large majorities are thankfully recorded by the organisers. But these intermittent expressions of opinion cannot always be taken at their face value: for example, there is reason to think that, among the practitioners themselves, the B.M.A.'s proposed employment of planned withdrawal as a political weapon commanded less genuine support than was generally supposed. As a means of recording what doctors really think, more use could perhaps be made of the referendum; but with this instrument, of course, the validity of the answer will depend on whether the arguments, pro and con, are equally presented. As a society of educated people with a scientific background, the B.M.A. has an exceptional opportunity to develop a better technique of ascertaining opinion, and this in itself might be a considerable service. But what may matter even more—if it seeks to speak for the whole profession—is that it should not only discover its minorities but actually cherish them and take pains to see that they are represented. In a democratic organisation there is always the risk that the majority will acquire a kind of sanctity; but nothing could be more foreign to a catholic professional body than the emergence, even in council, of a monolithic party. To suggest in this way that the association should retain its outstanding qualities but shed their complementary defects may be asking the impossible; but until it finds means to do so there will be room, even in medical politics, for representation of professional opinion by smaller bodies with amateur status.

As for the setback in professional unity which has so much disturbed the representative meeting, we see no reason for discouragement. Opinions differed sincerely and deeply on the correct response to the Government's unhappy decisions on the pay-claim; but they differ little if at all on the need to reach and secure a satisfactory settlement; and if, when the Royal Commission has reported, such a settlement is not forthcoming, few will question the desirability of establishing again, if possible, the united professional front of a year ago. Colleges and association are, after all, no more than limited means to a great end—servants of a profession to which we all belong. But by consultation between them a policy might be evolved which all would wholeheartedly support—remembering that even unity is worthless unless the strength it gives is used aright.

Annotations

ADRENAL INSUFFICIENCY

TEN years ago adrenal insufficiency was rare; but now, as a result of the therapeutic use of the corticosteroids, it is common. Adrenal insufficiency is still often unrecognised, and often it is fatal. A patient who has previously received the drug from a general practitioner may be ignorant of the fact; so may be his surgeon when operation is subsequently required. In 1953 Salassa et al.[1] gave a warning that administration of cortisone left patients in a state of adrenal insufficiency which became manifest only under the stress of operation, and then by fatal collapse; and in these columns Slaney and Brooke[2] and Allanby[3] have lately described evidence of this sequence. At the Memorial Centre, New York, in one year 1 out of every 300 surgical patients exhibited adrenal hypofunction during or after operation.[4] Accordingly the practice is growing of administering cortisone during and after operation to patients who have received steroid therapy in the previous two years. It is impossible to detect cases in which adrenal function has been so depressed by the original therapy as to cause susceptibility to subsequent operative stress; all patients who are known to have received corticoids have therefore to be given cover. Clearly it would be preferable to confine the risks inherent in cortisone administration[3] to those who are seriously deficient of corticoids, and there is, therefore, an urgent need for a test of adrenal insufficiency. The eosinophil response to administration of corticotrophin is too variable; Hasner et al.[5] observed that little importance can be attached to responses of less than 50%. The direct assay of glucocorticoids in serum and urine after a stimulating dose of corticotrophin, though an obvious approach if a fairly constant level of normal control could be assured, is complex and time-consuming if the protein and glucuronide bound corticoids in the serum are to be assessed; the decrease in 17-ketosteroid excretion might provide a simpler though less direct approach. High urinary sodium excretion in association with hyponatræmia may indicate a deficiency in mineralocorticoids; Perlmutter has used this as a test[6] to

1. Salassa, R. M., Bennet, W. A., Keating, F. R., Sprague, R. G. *J. Amer. med. Ass.* 1953, **152**, 1509.
2. Slaney, G., Brooke, B. N. *Lancet*, 1957, i, 1167.
3. Allanby, K. D. *Ibid*, p. 1104.
4. Howland, W. S., Schewizer, O., Boyan, P., Dotto, A. C. *J. Amer. med. Ass.* 1956, **160**, 1271.
5. Hasner, E., Carlsen, K., Engdahl, I., Klaerke, N., Paaby, H., Schultze, B., Sprechler, M., Sprensen, B., Tobiassen, T. Adrenals in Surgery. Copenhagen, 1952.
6. Perlmutter, M. *J. Amer. med. Ass.* 1956, **160**, 117.

confirm the diagnosis of adrenal insufficiency but only when collapse had already occurred; latent insufficiency is unlikely to be predictable from sodium metabolism, which becomes significantly distorted only when collapse is at hand. Serum-calcium levels may be worth studying, for Taylor and Craven [7] discovered a 20–40% increase in 32 of 36 cats submitted to bilateral adrenalectomy; further, hypercalcæmia has been reported in Addison's disease [8] and in patients after adrenalectomy for Cushing's syndrome.[9] But these are circumstances of total adrenal failure, and we are concerned with a threshold state in which the endogenous hormonal production is adequate except when an added stress such as surgery is applied. A quick test is required which will indicate not only whether corticoid function is reduced but also whether the level is so low as to cause the patient to collapse under stress.

WHERE DOES HYPERTENSION BEGIN?

WHEN is a man hypertensive? Many write as though hypertensives formed a clear-cut group like paraplegics; but, as we pointed out,[10] the work of Hamilton et al.[11] made it doubtful whether essential hypertension could be considered a disease; and Dr. William Evans, whose article we published last week,[12] implies that some of those with mutable hypertension (hypertonia) are hardly to be regarded as diseased.

Two further studies of the distribution of blood-pressure in a population confirm the arbitrariness of any limit set to the normal range. Bøe et al.[13] managed to record the blood-pressures of no less than three-quarters of the entire adult population of the city of Bergen—some 69,000 people. In general the patterns found by Hamilton et al. are confirmed: the distribution of all pressures is approximately log-normal with considerable variance; and both mean and variance increase steadily with age. The arithmetical mean of systolic and diastolic pressures behaves with especially striking regularity, suggesting that this value, though not identical with the true mean pressure, is close enough for practical use. Since the true mean pressure is the natural variable appropriate for indicating the stress on heart and arterioles, this estimate might well be used clinically to specify the blood-pressure, the pulse-pressure being usually of little clinical interest. Bøe et al. also demonstrate a positive, but not very important, correlation of pressure with excess weight; and they show that some discrepancies in the highest age-groups can plausibly be attributed to excess mortality among those with the highest pressures. Comstock [14] studied a much smaller sample, but one carefully constructed to be representative of his district in the south of the U.S.A. His figures conform to the pattern described, and he also establishes what had previously been suspected—that the pressures of American Negroes are somewhat higher than those of the Whites.

Statistics such as these are an essential complement to clinical experience. The clinician sees many patients suffering from the results of high blood-pressure, but it now appears clear that for every such patient there exist several uncomplaining people of similar age and pressure, some of whom may continue indefinitely without ill effects. The statistics demonstrate the arbitrary nature of the definition of hypertension, and the magnitude of any programme of prophylaxis; and, by implication, they show the need for a more exact prognosis (such as Dr. Evans's clinical work suggests).

At present blood-pressure can only be lowered at the cost, not only of constant medical supervision, but also of various unpleasant effects. Before he exposes symptomless hypertensives to the perils of mecamylamine ileus, veratrine emesis, reserpine psychosis, or hydrallazine lupus, a manometric Procrustes should be sure of his ground.

BRAIN FUNCTION

As a prelude to the First International Congress of Neurological Sciences to be held in Brussels next week, the Wellcome Historical Medical Library with the coöperation of the National Hospital, Queen Square, and the Maudsley Hospital, organised a three-day Anglo-American symposium on the history and philosophy of knowledge of the brain and its functions.

After the official opening by Mr. M. W. Perrin, chairman of the Wellcome Foundation, the American Ambassador opened a number of important exhibitions arranged for the occasion, including centenary exhibitions in honour of J. F. F. Babinski, Victor Horsley, and Charles Sherrington. Formal sessions were held at all three centres on a variety of philosophical, historical, and clinical topics pertinent to present-day research concerning the relation of brain and mind. Evening receptions were held by the Wellcome Foundation and the Royal College of Physicians. The symposium ended with a dinner at Apothecaries' Hall where guests were welcomed by Dr. Macdonald Critchley, the master, and Sir Henry Dale, chairman of the Wellcome Trust, proposed the toast of Anglo-American Coöperation in Science and Medicine.

TUBERCULOSIS AND DIABETES

THERE is no doubt that tuberculosis—particularly pulmonary tuberculosis—is commoner in diabetics than in the population at large. At University College Hospital, London, all patients attending the diabetic clinic between January, 1940, and December, 1954, had a chest radiograph. Of 1851 patients, 34 were shown to have active pulmonary tuberculosis—18·2 per 1000, compared with 4·9 per 1000 in the general population. Turner-Warwick [1] has now described these cases in full and a further 11 in which the disease was discovered while the patients were under surveillance at the clinic. Apart from a preponderance of females, which was as might be expected from the known sex-distribution of diabetes, the tuberculosis had no special features, and the concept of "diabetic tuberculosis" [2] is firmly refuted. On the other hand, Turner-Warwick presents good evidence that the development of tuberculosis is a function of poor diabetic control, thus supporting Dunlop's [3] advocacy of strictness.

In the past most tuberculous diabetics did badly; their diabetes was harder to control and their tuberculosis progressed faster than if the diseases had existed separately. But since the discovery of powerful drugs effective against the tubercle bacillus the position has changed dramatically. At University College Hospital 25% of all diabetics treated for tuberculosis before 1950 died between three and seven years from its onset; but no patient treated with anti-tuberculosis drugs has yet died from tuberculosis. Thosteson and Tibbits [4] treated 294 diabetics with tuberculosis between 1940 and 1952. Of the 167 discharged before 1946 only 50 (30%) were alive in 1953; but of the 127 discharged since 1946, 73 (57%) remained well.

7. Taylor, N. B., Craven, W. R. *Amer. J. Physiol.* 1927, **81**, 511.
8. Leeksma, C. H. W., de Graff, J., de Cock, J. *Acta med. scand.* 1957, **156**, 455.
9. Sprague, R. G., Kvale, W. F., Priestley, J. T. *J. Amer. med. Ass.* 1953, **151**, 629.
10. *Lancet*, 1954, i, 1224.
11. Hamilton, M., Pickering, G., Fraser Roberts, J., Sowry, G. *Clin. Sci.* 1954, **13**, 11.
12. Evans, W. *Lancet*, 1957, i, 53. See *Ibid*, p. 81.
13. Bøe, J., Humerfelt, S., Wedervang, F. *Acta med. scand.* suppl. 321.
14. Comstock, G. *Amer. J. Hyg.* 1957, **65**, 271.

1. Turner-Warwick, M. *Quart. J. Med.* 1957, **26**, 31.
2. Steidl, J. H., Sosman, M. D. *Amer. J. Roentgenol.* 1927, **17**, 625.
3. Dunlop, D. M. *Brit. med. J.* 1954, ii, 383.
4. Thosteson, G. C., Tibbits, R. S. *J. Mich. med. Soc.* 1953, **52**, 1088

A comprehensive report, by Luntz,[5] from the Birmingham clinic tells the same story as Turner-Warwick's. The lesson seems clear. Physicians in charge of diabetic clinics should recommend strict control of the disease; new diabetics should have their chest examined radiographically, and this examination should be repeated annually; and if tuberculosis is found, it should be treated energetically.

INTUSSUSCEPTION IN CHILDHOOD

DEATHS after operation for acute intussusception in children have decreased noticeably, particularly in countries where the care of children and the standard of surgery are of a high order. In England and Wales in 1954 there were 77 deaths from intussusception up to the age of 10 years; 70 of these deaths occurred in the first 2 years of life, and half of this number in the first 6 months. The mortality is, of course, highest among those who are seriously ill on admission to the ward, either because there has been undue delay in diagnosis or because the intussusception has been particularly tight and necrosis of the bowel has progressed rapidly. Unfortunately a few deaths still occur among the early cases, owing partly perhaps to inexpert management during anæsthesia or in the immediate postoperative phase.

Both in this country and in America attempts have been made to determine whether reduction of intussusception by barium enema should have some place in treatment. Enthusiasm for the conservative method is high in Scandinavia, and Hellmer[6] and Nordentoft[7] reported its use in all cases coming under their control. Ravitch and McCure[8] in Baltimore carried out some important experimental work on dogs which showed that the enema was fairly safe provided the pressure was not more than three feet; but their plea for its wider adoption was weakened by an invalid comparison of the results of surgery with those of conservative treatment. Hutchinson[9] realised the fallacy of such a comparison in 1873 when he reported the first successful operative reduction of intussusception in a child. "It is absurd to institute any comparison," he wrote, "between the treatment by injection and that by laparotomy. Statistical tables instituting a contrast as regards the relative success of the two measures are a mere waste of labour."

Packard and Allen[10] in Denver have reviewed 55 cases treated primarily by barium enema in the past ten years. Just under half of these (26) were successfully reduced, and 5 others were found to be reduced at subsequent operation. These figures of successful reductions correspond with those reported by Zachary[11] (33 out of 54 reduced successfully by this method). By selecting cases and restricting the method to children over 6 months of age with onset less than twenty-four hours previously, Zachary achieved successful reduction in over 80%.

Nelson[12] sought to evaluate the hydrostatic method in a series based on Hipsley's work.[13] Nelson drew attention to the distinction between the "tight" and the "loose" intussusception; and he suggested that delay in treatment or the passage of a lot of blood per rectum might be taken as indicating the probable failure of attempted conservative reduction. Zachary followed up this suggestion in the analysis of his cases and found a significant difference in results between cases treated within twenty-four hours and those seen later. He also confirmed the impression that intussusception in a young baby (less than 6 months of age) is more difficult to reduce than in an older child.

5. Luntz, G. W. R. N. *Brit. med. J.* 1957, i, 1082.
6. Hellmer, H. *Acta radiol., Stockh.* 1948, suppl. 65.
7. Nordentoft, J. M. *Ibid*, suppl. 51.
8. Ravitch, M. M., McCure, R. M. *Ann. Surg.* 1948, **128**, 904.
9. Hutchinson, J. *Med. Chir. Trans.* 1874, **57**, 31.
10. Packard, G. B., Allen, R. P. *Surgery*, 1957, **41**, 567.
11. Zachary, R. B. *Arch. Dis. Childh.* 1955, **30**, 32.
12. Nelson, T. Y. *Med. J. Aust.* 1949, i, 825.
13. Hipsley, P. L. *Ibid*, 1926, ii, 20.

The authors of these three papers have adopted a middle-of-the-road policy in their hospitals, by selecting cases for barium enema in which the chances of reduction are high, and insisting on primary surgery for those in which the conservative method is unlikely to succeed. Further controlled trials of reduction by barium enema are proceeding in this country, and, if they confirm the findings already mentioned, cautious extension of the use of the conservative method might be reasonable. But this method can be a possible alternative to operation only in the straightforward easily reducible intussusceptions, among which there should be no mortality.

THE CHILD IN HOSPITAL

THOSE who look after children in hospital are justifiably proud of the care they have always given to their patients. For many of them it has been hard to admit that a child may be disturbed emotionally by a stay under their care. The fact that children, even those distressed on admission, usually "settle" into the ward routine is cited as evidence that they are not harmed by admission; and because many children cry after their parents have visited them it is still often maintained that they are least upset when not visited. The difficulty of accepting that separation from the mother can be harmful is especially great because the baby or young child is likely to provoke warm maternal feelings in the nursing staff, who do not know how these babies develop after they leave hospital. Yet children under 2 may show severe and continuing emotional damage after separation from the mother. This has long been known to individual parents and to those working with psychologically ill children, but has only recently been brought to more general notice.[1 2]

As evidence has accumulated, many pædiatricians and nurses have acknowledged that their devoted care is insufficient to meet the emotional needs of the sick child. Daily visiting is increasingly becoming the practice—although unfortunately there are still many exceptions. In some wards it is recognised that the mother's presence is positively beneficial both psychologically and physically, and unlimited visiting by the mother is permitted[3]; and in certain cases mother and child enter hospital together.[4 5] Schemes are also being introduced to enable most ill children to be treated at home,[6] and elective operations are being postponed until later childhood. But it is impossible to eliminate the need for hospital treatment for young children.

In a paper describing her 4½-year-old daughter's experience of tonsillectomy, Joyce Robertson[7] gives a very convincing picture of the young child's great fears in connection with this operation. This little girl suffered anxiety despite her mother's presence throughout her hospital stay, and despite careful preparation for the operation by her thoughtful and understanding parents. A mother's comforting presence can help to make a terrifying experience tolerable. But an anxious mother may herself need reassurance before she can help her child, and an ill-informed mother may need explanation before she can give simple answers to the child's questions. Parents are seldom encouraged to help their child before admission by giving him some idea of what is in store for him, and explanations are rarely given in hospital.

The need for greater understanding of the emotional strain a child may undergo during a stay in hospital is further shown by Vaughan,[8] who describes a group of

1. Bowlby, J. *Wld Hlth Org. Monog.* no. 2. 1951.
2. Spitz, R. *Psychoanal. Study Child.* 1945, **1**, 53; *Ibid*, 1946, **2**, 113; *Ibid*, p. 313.
3. Campbell, K., Blanch, M. *Lancet*, 1955, ii, 971.
4. Spence, J. C. *Brit. Med. J.* 1947, i, 125.
5. Pickerill, C. M., Pickerill, H. P. *Lancet*, 1954, i, 425.
6. Lightwood, R., Brimblecombe, F. S. W., Reinhold, J. D. L., Burnard, E. D., Davis, J. A. *Ibid*, 1957, i, 313.
7. Robertson, Joyce. *Psychoanal. Study Child.* 1956, **11**, 410.
8. Vaughan, G. F. *Lancet*, 1957, i, 1117.

children admitted to hospital for operation for strabismus. Each child was given some information about his operation and an opportunity to ask questions about it. This greatly relieved the children's anxieties, and the long-term psychological results were found to be beneficial. It is a sad commentary on present attitudes in hospital that such help had to be introduced as a special measure in a children's ward. Now that it has been done, and been shown to be helpful, those caring for sick children may be led to reconsider their part in removing their patients' anxieties.

RABIES PROPHYLAXIS

BRITAIN has been free of rabies since 1903, except for a short period after the 1914–18 war when illegally imported dogs reintroduced the disease. We owe our continuing freedom from this disease to quarantine regulations, the stringency of which has been justified.[1] Even before the days of rabies vaccine the incidence of the disease among those bitten by rabid animals was only 9%[2]; but protective measures must always be applied to someone thus bitten, since the disease is almost invariably fatal. The W.H.O. Expert Committee on Rabies[3] emphasises the importance of local treatment of the bite wound, which should be thoroughly cleaned with soap or detergent solution and, if the site permits, cauterised with strong nitric acid. Suture should be delayed, and the tissues beneath the wound infiltrated with at least 5 ml. of anti-rabies serum.

Rabies vaccine was introduced by Pasteur in 1885.[4] The results of administering vaccine have been given a favourable appearance by the "reduced" mortality-rate, which excludes cases where the disease develops within two weeks of the end of vaccine treatment. Bites of the head and face, especially in children, may cause the disease in as many as 11% of treated cases,[2] and in these the incubation period is about half that observed in patients who have had no vaccine. The Pasteur Institute of Iran, Teheran, has found a mortality-rate of 40% in those bitten on the head or neck (the sites usually attacked by rabid wolves), despite vaccine treatment.[3] Experimental work has not demonstrated any protection by vaccine given after the introduction of infective rabies virus, but Koprowski et al.[5] have pointed out that in guineapigs and hamsters (the animals used) the incubation period is short; the longer incubation period in man may well allow time for the development of an immune response to the vaccine. Traditional attenuated virus vaccine made from rabbit spinal cord or brain may cause reactions—attributed to myelin—ranging from local erythema and œdema to encephalitis and paralysis which may be fatal[6 7] and, very rarely, to rabies itself.[8]

Antiserum, prepared in sheep, is apparently a useful adjunct to vaccine for protection after bites in man. Among severely bitten patients Shortt et al.[9] found a mortality of 4% in nearly 200 who received only vaccine, compared with 2% in nearly 600 who received serum as well. More recently Teheran workers have reported[10] that among 18 patients, all severely bitten on the head or neck by the same rabid wolf, 3 of 5 treated with vaccine alone died of rabies, whereas of 13 who received in addition a concentrate of antirabies rabbit serum by intramuscular injection only 1 succumbed. On the other hand the experimental work of Shortt et al.[9] showed no virtue in antiserum given after infection; but concentrates of the γ-globulin fraction of serum of hyperimmunised sheep or rabbits have been used with success in guineapigs, hamsters, and dogs after infection,[5] and in dogs this protective effect is significantly enhanced by the subsequent administration of vaccine.[11] Thus there are grounds for believing that vaccines as well as antiserum are useful, and a vaccine that could be used without fear of causing paralysis is much needed.

Koprowski and Cox[12] cultured in chick-embryos a strain of rabies virus called Flury. This strain was isolated from human nervous tissue[13] and later passed more than a hundred times in the brains of day-old chicks. Later work with this strain has shown, after nearly two hundred chick-embryo passages, a loss of virulence for dogs, rabbits, and adult mice,[14] while immunogenic power is retained.[15 16] Such an attenuated egg-grown strain has the advantage of containing no nervous tissue such as sometimes causes paralysis after the administration of classical vaccines. Peck et al.[17] have now reported trials with a rabies vaccine consisting of virus grown in duck eggs and killed with β-propiolactone. Killing the virus eliminates the very slight risk of the vaccine causing rabies,[8] at the cost of some loss of potency; but the vaccine remains more effective in mouse-immunisation tests than the standard vaccine of the National Institutes of Health, and has produced, on repeated injections, satisfactory levels of neutralising antibody in cynomolgus monkeys and volunteers.

RADIATION DOSAGE IN RADIOGRAPHY

IN the past year, following publication of a report by the Medical Research Council,[18] the view has gained ground that it is necessary to reduce the gonad dose resulting from radiography and particularly from obstetric radiography.

Two new reports[19 20] amplify existing information on maternal and fœtal radiation dosage during obstetric radiography and give valuable suggestions for reducing this dosage. Inlet projections in pelvimetry (the Thoms view in particular) result in a very much higher gonad dose, particularly to the fœtus, than any other single view. In the opinion of these workers and of Hartley[21] and Moir,[22] among others, this view can usually be omitted in pelvimetry. Bewley et al.,[19] using a relatively high kilovoltage (120 kVp), measured a fœtal gonad dose with a vertex presentation of 2·8–4·6r. for inlet pelvimetry, compared with a maximum of 0·14 for lateral or outlet pelvimetry films. Both reports[19 20] emphasise that radiation dosages may be lowered by using a higher kilovoltage than is customary, at the cost of some loss of definition.

To safeguard patients against excessive dosage, it is essential not only that technique should be good, but that each exposure should be recorded, including any exposure that has to be repeated owing to failure to secure a satisfactory film.

Sir JAMES PATERSON ROSS has been elected president of the Royal College of Surgeons of England.

1. Galloway, I. A. *Trop. Dis. Bull.* 1945, **42**, 674.
2. Kraus, R., Gerlach, F., Schweinburg, F. Lyssa bei Mensch und Tier. Berlin, 1926.
3. *Wld Hlth Org. tech. Rep. Ser.* 1957, no. 121.
4. Pasteur, L. *C.R. Acad. Sci., Paris*, 1885, **101**, 765.
5. Koprowski, H., Van der Scheer, J., Black, J. *Amer. J. Med.* 1950, **8**, 412.
6. Greenwood, M. *Bull. Hlth Org., L.o.N.* 1945, **12**, 301.
7. Redewill, F. H., Underwood, J. *Calif. Med.* 1947, **66**, 1.
8. Remlinger, P. *Ann. Inst. Pasteur*, 1935, **55**, suppl. 35.
9. Shortt, H. E., McGuire, J. P., Brooks, A. G., Stephens, E. D. *Indian J. med. Res.* 1935, **22**, 537.
10. Baltazard, M., Bahmanyar, M. *Bull. World Hlth Org.* 1955, **13**, 747.
11. Koprowski, H., Black, J. *J. Immunol.* 1954, **72**, 85.
12. Koprowski, H., Cox, H. *Ibid*, 1948, **60**, 533.
13. Leach, C. N., Johnson, H. N. *Amer. J. trop. Med.* 1940, **20**, 335.
14. Koprowski, H., Black, J., Nelson, D. J. *J. Immunol.* 1954, **72**, 94.
15. Koprowski, H., Black, J. *Ibid*, 1950, **64**, 185.
16. Koprowski, H., Black, J. *Ibid*, 1954, **72**, 503.
17. Peck, F. B., Powell, H. M., Culbertson, C. G. *J. Amer. med. Ass.* 1956, **162**, 1373.
18. Hazards to Man of Nuclear and Allied Radiations. H.M. Stationery Office, 1956. See *Lancet*, 1956, ii, 949.
19. Bewley, D. K., Laws, J. W., Myddleton, C. J. *Brit. J. Radiol.* 1957, **30**, 286.
20. Clayton, C. G., Farmer, F. T., Warrick, C. K. *Ibid*, p. 291.
21. Hartley, J. B. *Lancet*, 1956, ii, 46.
22. Moir, J. C. *Ibid*, p. 99.

British Medical Association

THE 125th annual representative meeting of the British Medical Association opened on July 10 in Newcastle upon Tyne, under the chairmanship of Dr. I. D. GRANT (Glasgow). Prof. A. P. THOMSON, of Birmingham, was elected president of the association for 1958–59.

Moving the reception of the annual and supplementary reports of the council of the B.M.A., Dr. SOLOMON WAND, chairman of the council, paid tribute to the work of his predecessor, Dr. E. A. Gregg, to Brigadier H. A. Sandiford, medical director of the International Medical Advisory Bureau, and to the association's secretary, Dr. A. Macrae. He also referred to the award of the B.M.A. gold medal to Sir Henry Dale—the first time it had been awarded to a man who had never done clinical work. The main task of the B.M.A., Dr. Wand said, was to promote harmony and unity in the profession.

After a pleasant welcome from the Lord Mayor of Newcastle, representatives turned to the main meat of the first day's affairs—the report of a committee which had been considering the constitution of the B.M.A. Some representatives thought the members had not had enough chance to study the report; and they unsuccessfully attempted to defer decisions on it. Mr. H. H. LANGSTON (Winchester), chairman of the committee, said that the structure of the association, based on the division, was to be retained; indeed, the original constitution of 1901 had served so well that no revolutionary changes were proposed.

RECONSTITUTION OF THE BRANCHES

Much controversy centred on the proposal to reconstitute the second-tier unit of the association—the branch—on the basis of regions as nearly as possible conterminous with those of the regional hospital board The supporters of this course argued that the regions would at least correspond to the working units of the hospital staffs, which might make coöperation with regional hospital boards easier. But few representatives agreed, and many held that the areas would be too large to maintain members' interest, that the regional-board area was not an organic one corresponding to natural gatherings of doctors, that such areas did not correspond to the working divisions of family and public-health doctors, and that hospital staff were not the most active in association affairs. Others maintained that the association should not be organised according to the National Health Service, that the regional-board delineations might be changed, and that regional boards should not get the idea that the association was trailing behind them. It was eventually decided to reconstitute the branches, but not necessarily along the lines of regional boards, leaving divisions the right (with the approval of the council) to choose to belong to a different branch if this was necessary for geographical reasons. The main function of the branches would be to foster the unity of the profession in the area, largely by calling together the constituent divisions, but sometimes by calling meetings of individual members when this was expedient. They would hold annual meetings, and distribute funds from headquarters among the divisions.

COUNCIL AND REPRESENTATIVE BODY

No change was proposed in the constitution of the council or methods of election to it. Amendments proposed the establishment of a "senate" (as a combination of second chamber and electoral college), the election of most council members by representatives (not grouped branches), the statutory appointment of two young practitioners to the council, and the naming of the council as the ultimate authority for policy-making. All these propositions were defeated with varying degrees of indignation; but a proposal that council members should be returned by single-member constituencies was referred to the council.

The second controversial proposal of the committee was to cut the number of representatives to 350—on the grounds that competition for election would be keener and debates better, and that a small body could be accommodated where a larger one could not. But other arguments prevailed: that minorities must be represented, that the representative should know his constituents, and (as Mr. LAWRENCE ABEL put it) "the more the merrier." The proposal was defeated. The minimum quorum was fixed at a third of the number of representatives appointed to attend the meeting.

COMMITTEES

Two-thirds of hospital doctors are not consultants; and it was suggested that the junior specialist should be better represented on the Central Consultants and Specialists Committee. Some thought that the interests of the juniors were already looked after, others that they should be better represented, but not in proportion to their numbers. On the suggestion of Dr. Wand, the proposal was referred to the council.

Proposals to change or review the autonomous bodies were defeated or deferred. The committee's recommendation that no new group be formed was defeated, representatives feeling that embargos were unwise and might lead to ossification or the formation of groups outside the association. Suggestions that the registrars' and other groups be reorganised were referred to the council. The amended report of the constitution committee was then approved.

SMOKING

From time to time on the first day of the meeting attempts were made to suspend standing order 70 (which forbids smoking); at first the chairman observed that the regulations of the Newcastle City Hall forbade smoking until the last hour of the day; in the last hour, the proposal to suspend the order was defeated.

ORGANISATION

On the second day, the theme of unity recurred when it was decided to defer for a year discussion of the autonomous bodies, and again when a motion was proposed to prevent independent action by an individual member of a negotiating committee. The motion was opposed on the ground that committee members were representatives, not delegates; but the general feeling, that unity of the representatives was essential, won the day, and such independence was condemned. Professional unity was also one reason why the meeting supported the view that, in future negotiations, only terms enforceable by law should be accepted.

There were two demands for permanent staff, both defeated after discouraging comments by the treasurer. One was for a department to advise on terms of service, in the hope of forestalling or answering Government suggestions; another was for full-time secretaries in areas with a regional office. The treasurer also discouraged a proposal to cut the association subscription for full-time salaried doctors. A motion proposing greater freedom of members wishing to change their division did not receive the necessary two-thirds majority.

The possibility was discussed of urging the General Medical Council to allow a period of work with an approved general practitioner as appropriate experience in the preregistration year; there was much sympathy for this idea, despite certain difficulties, and it was referred to council.

OCCUPATIONAL HEALTH

Dr. J. A. L. VAUGHAN JONES, chairman of the occupational-health committee, referred to the schemes at Slough and Harlow New Town, and wished that more on these lines could be done everywhere. More attention

must be paid to small factories, and to training in occupational health. Universities would provide it only if there was a demand for it. New salary scales (for status was connected with remuneration) were approved for industrial medical officers; and the meeting condemned the practice which gave a lay person (e.g., a trade-union official) the right to be present at a medical examination, such as testing colour-vision.

PUBLIC HEALTH

Dr. J. B. TILLEY, chairman of the public-health committee, said that all local authorities but two (Glasgow and Isle of Man) had agreed to increased remuneration for public-health officers according to the agreement of April 1, 1956. The council approved in principle of public-health doctors serving on hospital medical advisory committees—another step toward professional unity—though they should not regard this as a right. It was agreed that the question of maternity leave for women doctors be given further consideration; most speakers felt that the amount of leave needed must be determined by the woman herself.

The meeting agreed that the position of public-health doctors should be reviewed after the Royal Commission had made its report, to ensure that their pay and status be in line with those of other doctors. A motion was defeated which sought to discourage health visitors from giving medical advice without the family doctor's consent. Some speakers were uneasy about the ethics of the position; most thought that the health visitor's work should not be interfered with; and everyone had a good word for her. The meeting decided to say nothing about her salary.

FINANCE

Mr. L. D. CALLANDER, treasurer of the B.M.A., was able to report a favourable balance, but only because the membership had increased; unless it increased again, he might, he said, be less happy next year. He agreed that the figure of £22,000 for central meetings' expenses was misleading in that it omitted the cost of the General Medical Services Committee, which was self-supporting. Mr. Callander announced that planning permission had been granted for the Burton Street project, and this would provide revenue in the future. One of the council's economies—stopping postage payments on books borrowed from the library—came under heavy fire. Country members, who could not often use B.M.A. House, complained of cheese-paring; the library, they said, was one of their few links with the association. Other speakers emphasised that a major aim of the association was postgraduate education. The council was asked to reconsider its opinion.

GENERAL MEDICAL SERVICES

Dr. A. B. DAVIES, chairman of the General Medical Services Committee, reported that his committee was pressing for better general-practitioner representation on regional hospital boards, and for more hospital beds for family doctors. The Ministry had accepted its proposals on trainee general practitioners, and had raised the lower temporary-resident fee from 5*s.* to 8*s.* 6*d.* The committee had started work on an alternative scheme for withdrawal from the National Health Service, and was taking steps to increase the fighting fund. Regulations were being so framed that family doctors would be paid monthly, not quarterly; and the amount to be repaid, in October, to each doctor for practice expenses for 1955–56 would be about £200. After a long discussion about practice accommodation, the council was asked to consider tenancy terms for suites in health centres, and a motion was defeated which urged interest-free loans for new surgery accommodation for single-handed doctors as well as those in partnership.

Several motions discussing commercial emergency-call services were withdrawn when Dr. Davies said that he was approaching the sponsors. Many speakers supported resolutions calling for more beds, more obstetric beds, and more diagnostic aids for general practitioners. No-one opposed them, though fears were expressed that the grave shortage of radiographers would prevent the last resolution from being put into practice. Additional obstetric beds, it was argued, could be provided most economically in general-practitioner hospitals, which could also help to raise the standards of practice.

In a keen discussion on prescription charges, some speakers called for their abolition on medical, social, and economic grounds; others spoke in their favour; and yet others thought the issue was not a proper one for the meeting to discuss. It was pointed out that the association had already protested repeatedly about the charges.

Motions calling for four-weekly National Insurance certificates were passed, but one requiring National Service medical boards to tell family doctors reasons for rejecting men was turned down, chiefly because it was held that this would be a breach of confidence.

In a discussion of service-committee and tribunal regulations, it was proposed that complainants and respondents should have legal representation, and that the ultimate appeal should not be to the Minister; but the meeting rejected these suggestions. Another motion sought to make it compulsory for a doctor against whom proceedings were to be taken to be informed of the charge; this was usually but not invariably done, and the suggestion was referred to council.

Two further proposals were referred to council: that the Minister be urged to cut to a minimum delay in notifying the findings of appeal tribunals; and that costs should be awarded against unsuccessful applicants to these tribunals.

A higher capitation fee for patients over 65 was suggested, with ably regimented arguments and figures, by Dr. AVIS JONES (Exeter); but representatives pointed out that other groups of patients caused doctors a lot of work, and the meeting, with regret, turned down her motion, as well as another calling for higher capitation fees in London; but it held that maternity fees and refresher-course allowances were both now inadequate.

Much indignation centred on a motion that a pregnant woman should be allowed to have antenatal care from her family doctor if she wished; apparently some consultants would not allow this when the baby was to be delivered in hospital. The general feeling was strong that the interests of mother and family doctor would be better served if she had a free choice; the motion was referred to council.

Other suggestions put to the meeting were ideas for more useful advertising literature and a modified form of medical-record envelope. The council was asked to investigate a uniform system of recording blood-groups and the possibility of introducing a 5-ml. insulin syringe.

CONSULTANTS AND SPECIALISTS

Mr. T. HOLMES SELLORS, chairman of the Central Consultants and Specialists Committee, said his committee had put much effort into the questions of junior hospital staffing and the redundant senior registrars; but no solutions had been found. The committee was trying to get assurance that the time-expired senior registrars would continue to be employed in posts comparable in status and pay. The question of remuneration of senior hospital medical officers had gone to arbitration, with disappointing results; no wholesale review had been made of their position, but about 200 were holding consultant-established posts and might well have their salaries increased, though not their status, to consultant

level. A motion was passed amending the constitution of the Central Consultants and Specialists Committee to include 2 members each from the G.M.S., the registrars-group, and the S.H.M.O.s-group committee; and another motion was referred to council calling for a provincial and a whole-time consultant and a S.H.M.O. to join the Joint Consultants Committee.

The meeting was concerned at the plight of time-expired senior registrars who had not found consultant posts, especially those who had not served in teaching hospitals; many members would have liked to create more consultant posts for them (especially since many of these men did consultant work), but the drawbacks of this step were paraded. Mr. Holmes Sellors agreed that the position was unhappy, but he thought his committee and the Ministry were doing all they could, and that the bulge would run out in seven years; other members were not satisfied, and asked the council to look at the problem afresh. The feeling was much the same about the status and pay of S.H.M.O.s. "We go on asking and go on getting 'no'," said Mr. Holmes Sellors, but the meeting wanted him to ask again.

It was said that the Guillebaud Committee had gone beyond its terms of reference in recommending a reduction in the number of medical members of hospital boards and committees; this reduction was deplored by many speakers, and the meeting resolved that the number should not fall below 25%. At this point Mr. ABEL introduced a special motion calling on the council to make representations to the Chancellor of the Exchequer about doctors who suffered under income-tax schedule E, in accordance with the Financial Secretary's request to professional bodies (*Hansard*, July 2).

POWERS OF REPRESENTATIVE BODY

Dr. V. COTTON-CORNWALL (Liverpool) expressed concern that the representative body was losing control over the council. He said that some resolutions of the representative body had not been acted on by the council, or had been changed and weakened (e.g., resolutions condemning the equal tripartite administration of hospitals). Dr. WAND said changed circumstances might make it wrong to carry out a resolution. Other speakers thought that in such cases no action should be taken and the matter referred back to the next representative meeting; but opinions of committees must not seem to be opinions of the representative body. Further discussion was deferred.

Dr. Wand said that, as circumstances changed, details of policy had to change. For example, if the representative body demanded an increase of a fee from one guinea to two, and during negotiations £1 17*s.* 6*d.* was offered, by the letter of the constitution, a decision on this would have to wait a year, or a special representative meeting called, or a referendum held. He said that to force the council to act constitutionally would be to tie its hands. Dr. COTTON-CORNWALL said that the council had failed, in a particular instance, to carry out the wishes of the representative body, and that if the constitution were unworkable it should be changed. One speaker said that coördination of all parts of the association was now the only essential, and that the motion bred disunity; another remarked that the representative body was jealous of its power as the only policy-forming body, and that if the council could, at any time, not carry out the decisions it must justify itself. The motion was passed as a reference to council.

MERIT AWARDS

Some speakers were for abolishing merit awards, introducing perhaps instead a system of payments for responsibility (e.g., in organising the anæsthetic services for an area). This found little favour, but a motion was referred to council demanding that, when the National Health Service was overhauled, the secrecy surrounding merit awards should be dropped.

JUNIOR HOSPITAL STAFFS

The meeting agreed that junior hospital staff were relatively and absolutely underpaid, and that representatives of any group whose conditions were being considered by Whitley Committee B should be coöpted or consulted. It criticised board and lodging charges, but defeated proposals to abolish them for preregistration doctors (who had no choice but to become residents) and for married doctors (who had to maintain a home outside). The meeting preferred to press for reasonable standards at reasonable cost. It deplored delay in reducing the charges where these exceeded the proper charge as assessed by the hospital authority.

SPENDING AND CHARGING

The meeting reflected common concern over the welfare of old people too ill to live alone and not ill enough to go to hospital. It called for coördination between hospital and local authorities to assume joint financial responsibility. Seeking to amend a motion on this subject, Mr. ABEL called on the Government to spend not less than £100 million a year for ten years on hospital building. The meeting changed the figure to "a substantial and adequate sum over the next ten years." Keeping the interests of patients at heart, representatives called for domiciliary chiropody under the N.H.S. and for blood and drugs for private patients; but they refused to sanction a charge for food to hospital patients.

OVERSEAS AND COMMONWEALTH

There was praise for the work of the delegation which had visited Malta; and for the work and expansion of the Commonwealth and International Medical Advisory Bureaux. Several overseas visitors spoke, including Dr. O. K. OGAN, of Nigeria. In West Africa, he said, where there were fewer than 1500 doctors for some 40 million people, there was less opportunity for boredom and frustration. He commended the democracy, good humour, and concern for the patient which the representative meeting had shown.

ETHICS

The two main ethical topics which the meeting considered were the need for new rules about anonymity, in view of television appearances and signed popular booklets, and concern at the harm done to colleagues by the pronouncement of doctors called as expert witnesses in court. Most speakers felt that harm would be done by deprecating one doctor criticising another in court; this would not only be against public interest and judicial practice, but would make it difficult, in cases where a doctor was criticised, to vindicate him. The council was also asked to reconsider the prohibition of doctors and dentists working in one house.

SOME OTHER TOPICS

A motion was debated calling on the Government to deal quickly with traffic problems. Speakers referred to the accidents and the frustration caused by bad roads, and called for compulsory crash-helmets for motor-cyclists. Other resolutions pressed for the prohibition of the sale of dangerously inflammable clothing, and the introduction of a personal medical card with such details as liability to disease and hypersensitivity to drugs.

The council was asked to consider a suggestion that intraprofessional relations should come within the remit of the public relations committee; and the question of relations with other professions aroused some debate when a motion was put forward urging disapproval of preventive work by local-authority children's departments. Some speakers thought that such work should

be left to health visitors, but others were content that social workers should do it under the ægis of children's departments.

Higher fees were demanded for school doctors and short examinations for life assurance. A plea for increased fees for notification of infectious diseases and immunisation certificates was referred to council.

A NEW SERVICE ?

Dr. H. H. D. SUTHERLAND, chairman of the amending-Acts committee, outlined a programme for a new medical service which would, if approved by council, be submitted to the B.M.A. committee of inquiry into the Health Service. The proposed new service would be responsible to the Privy Council, free from party political control, and financed partly by contributions from patients and partly by the Exchequer. Life-saving drugs would be free to everybody, but others would be paid for. Doctors would be paid for each item of service, and they would be allowed private practice. The old and needy would be treated free.

Presidential Address

In his address, Mr. WELDON WATTS, the president, traced the history of medicine in Newcastle, beginning with the Roman medical orderly whose tombstone was found nearby. After him, history was silent, till the record of a consultation between a general practitioner (a monk) and a specialist (one Wm. de Barntort) in 1312—the first record of such a consultation. About this time a chirurgeon was granted room and food on the Inner Farne Island.

The Barber Surgeons and Chandlers Guild of Newcastle was licensed in 1442; and one of its duties was to give a play on Corpus Christi day. The Barber Surgeons Company still legally existed. In 1599 a town physician was appointed and the teaching of anatomy began in 1692. The Royal Victoria Infirmary was founded in 1751, and new buildings were opened a hundred years later; the present building was opened in 1906. The other general hospital was built in 1838 as the Union Workhouse Hospital, now Newcastle General Hospital.

The first course of instruction in the medical school was given in 1832. In 1851 came a schism: the majority school became associated with Durham University; a minority group went its independent way, but after seven years fused with the larger school. Until 1906 students were required to take an arts degree at Durham before starting medicine. When the new buildings were opened in 1889, the Newcastle college was the biggest provincial school in England.

Exhibitions

The two exhibitions—that organised by the drug and appliance manufacturers, and the scientific one—attracted many visitors. One striking feature was a plea for the flea as a cause of papular urticaria; and other notable exhibits included studies of disc lesions, pictures of 4 surviving adults, of whom 3 had had Wilms tumours and 1 a cerebellar tuberculoma in early childhood, and a model of a reablement flat with many ingenious devices for disabled housewives.

Conferences

POLIOMYELITIS

FROM A CORRESPONDENT

THE 4th International Poliomyelitis Conference opened in Geneva on July 8. The flags of the 69 countries participating were hanging in la Salle du Conseil Gènèral, and each official delegate had an opportunity to report on his country's position. Perhaps the worst news came from Hungary, where at present there are 600 in hospital with poliomyelitis in Budapest. Others, like Denmark, had had peace after the storm of 1952. A high proportion of 7th-nerve palsies characterised Egypt's outbreak of 998 in 1953—an epidemic twenty times greater than those of the 1930s. France had no increase and in Chile the age-incidence remained unaltered, 80% of those attacked being children under 3.

The demand for vaccination was greatest in those countries which had had big epidemics. Familiarity bred no contempt in Denmark, where 98% of the first five classes at school accepted vaccination. 93% of those aged 5–9 and 85% aged 20–39 were vaccinated and there was no difference in the incidence between the "relatively rich and the relatively poor." The State provided vaccination free in many countries and in others, like Finland, Belgium, France, and most of Germany, special laws had been passed to provide ambulances, respiratory equipment, and aftercare facilities. Many countries reported that they had started vaccination. In England and Wales, this was proceeding as fast as possible and the vaccine did not include the Mahoney strain. Serological studies revealed inexplicable facts, such as no antibody in 70 children tested in Southend and satisfactory titres in a similar group in Belper. In the Colonies, Kenya was experiencing a large epidemic of 700 paralytic cases, and of these 256 per 100,000 were European, 60 Asian, and 12 African. In respiratory paralysis, 10% were bulbar, 70% diaphragmatic or intercostal, and 20% a mixture.

Vaccine

Dr. JONAS SALK (Pittsburgh) discussed the efficacy of killed vaccine. He showed that antibody level remained high for at least 3–4 years for types 1, 2, and 3 after two doses given at short intervals, but the level usually rose when a third dose was given after a year. Time only would tell the length immunity lasted. Timing of vaccination was important and it was not yet known whether small doses at long intervals or large doses at short intervals was the best method, but Dr. Salk was convinced that vaccination reduced the incidence of paralysis, although possibly not the incidence of infection.

Dr. DAVID BODIAN (Baltimore) said that in the past three years the technical committee responsible for vaccine manufacture and the manufacturers met 50 times. Formalin satisfactorily inactivated virus and he spoke of advances in filtration by means of the Seitz filter, composed of cellulose and asbestos, which is better than glass. Present research was devoted to removal of live organisms without loss of antigenic titre. Dr. Bodian said it had not been possible to find a strain less virulent than the Mahoney strain which would produce a greater or equal amount of antibody.

Dr. A. D. LANGMUIR (Atlanta) said that after Francis's satisfactory reports of the field trials, 145 million doses had been given without incidents. This was after the Cutter accident. Vaccination could be continued even in epidemics, although it had no effect on their course. Encephalitis, nephritis, and Rh-sensitivity reversal were no greater than with any other inoculation. The vaccine gave 75% protection and he showed how, in epidemics in Boston and Chicago, the vaccinated had fared much better than the non-vaccinated.

Dr. H. KOPROWSKI (Philadelphia) spoke of his seven years' work on attenuated viruses, administered orally to produce immunity. Most of his work involved types 1 and 2, which proved to be effective immunising agents. Multiplication occurred immediately after ingestion, and serological immunity was reasonable in 7–21 days if the types were given separately, but there was interference if they were given together. Multiplication was a necessary accompaniment of antibody production and the virus remained in the gut for several weeks. Immunity remained for 7 years after a single dose. The attenuation was obtained by serial passage of plaque progenies in monolayers of monkey-kidney

epithelium and tested by direct inoculation of the central nervous system of monkeys. The vaccine remains attenuated after 6 passages through the human gut of adults but not of infants. Reinfection at a later date by homologous strains was not possible, the gut having "local" resistance. Type-3 vaccine, now available, produced satisfactory response. Mutation at present was unknown. Adamant adherents of safety first may be biologically wrong, Dr. Koprowski remarked, especially if attenuated strains oust the natural variety.

Dr. A. B. SABIN (Cincinnati) described his methods of attenuation, tests for neurotropism on monkeys, and experiments on volunteers. Partially attenuated strains gained in virulence for monkeys with a single passage through the human gut. Completely attenuated strains showed this property to a less extent, especially after many weeks of propagation in the gut. After this multiplication, immunity ensued. Antibody response followed in 5–10 days. He considered that live vaccine might be used to enhance maternally acquired immunity, and to fortify immunity after Salk vaccine, and perhaps in some countries where Salk vaccine was not available. Although he admitted that strains neurotropic for monkeys might emerge, as judged by inoculating large doses intracerebrally, he thought these would be harmless for man by the oral route.

The number of volunteers in both these series was small and before a live vaccine can be advised, a field trial, similar to the one for Salk vaccine, is necessary.

Dr. J. P. FOX (New Orleans) had made extensive studies of poliomyelitis in populations before and after vaccination. Families with newborn children with no antibodies were selected. Stools were examined regularly and when virus was detected, the other members of the family were examined virologically. The lower the social status, the higher was the number with antibodies. Before vaccination, 20 infants of 114 observed were infected in the first six months. 83 of those who became infected showed no illness, and none had paralysis. 27 had minor general signs and for 9 the diagnosis was aseptic meningitis. Vaccination in January, 1956, caused a rise of antibodies in the already immune, but no response in 36%, 26%, and 60% against type 1, type 2, and type 3 respectively. It did not alter the number of family infections, but excretion of virus was shortened in the actively immunised.

Dr. A. M-M. PAYNE (W.H.O., Geneva) surveyed a global field. In Sweden the attack-rate over 25 was still half the maximum attack-rate, which occurred in age-groups 1–4 and 5–9. Israel was the opposite; at 5 the attack-rate was 10% of the maximum—at age 1. Better notification revealed that poliomyelitis was more common than previously reported. He said that good health statistics, when available, gave the answer about whether vaccination should be introduced or not. In their absence, serological studies were necessary. Dr. JOHN PAUL (Yale, New Haven) said that some countries, such as Costa Rica and British West Indies, previously free from cases, had had a rude awakening. In a rapidly changing world, probably a lowering of the infant death-rate in any country and a shift from a low to a high incidence of cases in adults were indications for active immunisation. Dr. SALK pointed out that intracutaneous inoculation of 0·1 ml. was often as effective as 1 ml. intramuscularly as the second dose of this costly vaccine.

Echo Viruses and the Coxsackie Group

Dr. J. L. MELNICK (Yale, New Haven) said Echo viruses were among the most common and widespread parasites of man, discovered by new methods of tissue-culture. At first it was thought that the only disease they caused was aseptic meningitis. Their importance lay in their resemblance to poliovirus and it might be possible to produce a mixed progeny, capable eventually of producing immunity without being pathogenic. He showed that Echo viruses were commoner in the lower social grades than in the higher, and from 1800 stool examinations, he found that in the lower classes the figures for polio, Coxsackie, and Echo were 2·8, 2·1, and 6·6% and in the higher social class, 0·6, 1·3, and 0·6% respectively. In 221 cases of aseptic meningitis, polio was found in 32, Echo in 32, Coxsackie A in 9, and Coxsackie B in 19. Many-so-called orphans have therefore found a disease. Antibody levels rose eightfold in most infections. They may be closely related to the Coxsackie group in their evolution.

Details of several epidemics caused by Echo viruses, in many ways similar to those reported in England, were given. In an outbreak caused by Echo virus, type 6, in western New York State, described by Dr. T. KARZON (Buffalo) this virus was found in the stools from patients with aseptic meningitis; specific neutralising antibodies appeared 5 days after onset and persisted for 7 months. The virus was recovered from the C.S.F. itself and there was a high incidence of virus in stools from family contacts.

Dr. H. A. WENNER (Kansas), reporting an epidemic of aseptic meningitis due to Echo 4, described the clinical similarity to benign polio. Although myalgia was common, muscle weakness was exceptional, paralysis not observed, and reflexes normal. Lymphocytes in C.S.F. ranged from 16 to 900 per c.mm. In communities, the attack-rate may be as high as 26%, especially in the lower social classes. Serological increase of antibody confirmed the diagnosis in the absence of a rise against poliomyelitis, western equine encephalitis, St. Louis encephalitis, lymphocytic choriomeningitis, and mumps. The Coxsackie group, and in some countries, the arthropod-carried viruses, must be suspect. It was too early to say whether these viruses invaded nerve-cells of man and what were their relationship to the Coxsackie group.

Dr. G. DALLDORF (Albany) described the present position of Coxsackie viruses, of which 19 belonged to group A and 5 to group B. At first Echo viruses were said to be non-pathogenic for mice but type-10 Echo resembled Coxsackie B and type-9 Echo resembled Coxsackie A. Some specimens of group B grew in tissue-culture better than in suckling mice. In man, the B group caused aseptic meningitis in children and pleurodynia in adults, and group A caused herpangina.

Dr. M. L. FURCOLOW (Kansas) described aseptic meningitis due to Coxsackie B-5; there had been a large outbreak in Iowa and endemic cases in neighbouring states, usually in children under 10.

Dr. J. H. S. GEAR (Johannesburg), described three devastating, though small, outbreaks of encephalomyocarditis in the newborn. Bowel upset was a feature. Out of 10 children, 6 died in one outbreak. The heart showed eosinophilic degeneration and pigmentation of fibres surrounded by inflammation, and in the C.S.F. protein and cells were increased. Dr. VAN CREVELD (Amsterdam) described similar cases in which Coxsackie A-4 was isolated from the heart muscle and other tissue in 4 fatal cases. Dr. F. O. MACCALLUM (London) described the distribution of epidemics Echo-9 in England.

Clinical Problems

There has been great improvement in the prognosis of respiratory paralysis. Dr. W. RITCHIE RUSSELL (Oxford) quoted figures to show a continuing improvement from approximately 17% mortality of all notified cases 10 years ago to 2·4% in 1956 (or 5% of paralytic cases in 1956). For the first time, in 1956 our figures were lower than those of the U.S.A. In the Danish epidemic in 1952, the figure was 10·7%—the same as in England that year. Dr. Ritchie Russell spoke appreciatively of Denmark's pioneer work.

Prof. H. C. A. LASSEN (Copenhagen) extended his already well-known observations. 25 patients of the 1952 epidemic became chronic respiratory cripples: 18 were still in hospital; and 3 had died. Several had renal calculi and impaired kidney function. 98% of children under 10 and 50% of adults under 40 were vaccinated. Since 1952 there had been only one respirator case—a well-deserved calm after the storm.

Dr. J. H. COMROE (Philadelphia), Dr. J. L. WHITTENBERGER (Harvard), and Dr. J. MEAD (Harvard) discussed basic principles: ideally, oxygen and carbon-dioxide volume in arterial blood and the pH were the observations required. Dr. G. HAGLUND (Gottenberg) believed in less elaborate methods: a mixture of negative-pressure breathing and an equal positive-pressure breathing was required. Other speakers emphasised that artificial respiration should be preventive not therapeutic. If given early, it prevented hæmorrhages and atelectasis, reduced mortality, and often abolished mental confusion.

Dr. J. F. BOSMA (Salt Lake City) said that most people with œsophageal paralysis recovered in a few days. Describing abnormal swallowing mechanisms, he pointed to many causes: atrophy of the tongue, palatal paralysis, failure of the constrictor muscles, a dilated pharynx, failure to raise the larynx, and incoördination between inhibition and contraction of the œsophagus. Treatment was difficult. On the results of cineradiography of the normal œsophagus with opaque material, Dr. G. M. ARDRAN (Oxford) disagreed with some of the conclusions although agreeing that post-poliomyelitis swallowing difficulties occurred.

Dr. C. W. DAIL (Hondo, California) discussed glossopharyngeal breathing. Air was sucked in through the mouth and several gulps were inspired, raising a vital capacity of 150–200 ml., perhaps fourfold. It caused no cardiac strain. Patients could stay out of tank respirators for several hours. Eating and glossopharyngeal breathing were not possible at the same time. The patient could cough and glossopharyngeal breathing was the best insurance against the common cold, which often reduced the patient's already low vital capacity by 20–30%. Many speakers expressed high opinions of glossopharyngeal breathing, which was the best method by which the patient could help himself.

Circulatory disturbances are often due to medullary involvement and are therefore associated with respiratory disorder, hyperpyrexia, and what Lassen has called "cerebralia." Dr. W. A. SPENCER (Houston, Texas) said that 126 out of 357 patients with life-threatening poliomyelitis had circulatory disorders. Treatment must be decided individually. The rises and falls in blood-pressure were sometimes inexplicable. Peripheral vasoconstriction may cause hyperpyrexia. Distal disturbances may result in cerebral hæmorrhage and severe gastric or rectal bleeding. Artificial respiration, whether by positive or negative means, must be given early to prevent, not late to treat, these disturbances.

Among the other complications were kidney stones and bony, especially thoracic, deformity. Dr. A. Y. SWEET (New York) said that all patients with calculi after poliomyelitis had infected urines. A rise in pH favoured calculi formation; the stones were usually struvite, apatite, and occasionally calcium oxalate.

In the discussion on treatment of the severely stricken, there was general agreement that active measures were contra-indicated in the active stage, but thereafter muscles should be fatigued, although not exhausted. Holidays from treatment were surprisingly beneficial. Spontaneous improvement was often remarkable; and electromyography was often valuable prognostically.

If the Salk vaccine produces immunity in only 75% as admitted at present, if live vaccine is at present a hope, then the need for therapy remains. The final word has not been said about some complications, probably because their treatment has to take second place to life-saving measures.

Biology and Morphology of Viruses

The tobacco-mosaic virus always raises fundamental issues: it consists of 6% ribonucleic acid (R.N.A.), which is "the wick in the candle," the rest of which (i.e., 94%) is protein. The R.N.A. serves as genetic material. In types 1 and 2 poliovirus, the protein is approximately 75%, R.N.A. 25%, and there is nothing else. These illuminating facts may open the door to effective therapy.

Dr. F. L. HORSFALL (New York) said that D.N.A. (desoxyribonucleic acid) and R.N.A. could initiate reproduction in some viruses, but how they combined with protein was unknown, although we were learning about the speed of multiplication. These data did "not unriddle the enigma about the manner in which the different virus components are formed to an infectious virus particle, which can infect a new host cell."

The secrets of the genetics of viruses are beginning to unfold by studying bacteriophage colonies (plaques). Some bacteria have latent viruses—i.e., the organism, though infected, shows no external evidence of it—but a different type of latency is shown in man (herpes simplex) and in mice (choriolymphocytic meningitis). These biological facts may lead to means of virus inhibition, and many possibilities arise, not the least of which is the shortening of the time the poliovirus remains in the human gut after infection.

Advances and Prospects

In a masterly summary at the end of the conference, Dr. C. H. ANDREWES (London) said that polio, Coxsackie, and Echo viruses were like peaks in a range of mountains. They were distinguishable by different pathogenicity for monkeys and suckling mice, and on tissue-culture, including HeLa cells and eggs. We still did not know their power to invade the nervous system. Some did not obey all the rules of their group. The strain at first said in Russia to be a new polio virus (type 4) was now known to be Coxsackie A-7 and others like the European Echo 9 were awkward to classify precisely. Interbreeding or recombination was possible. In future, we may need vaccines for all the enteric viruses. Dr. Andrewes also discussed the relative merits of killed and attenuated vaccines. These two potentially victorious weapons might be complementary: we must know how, when, and where to use them. Enders's work on tissue-culture reported in Copenhagen in 1951 and Salk's vaccine preparation reported in Rome in 1954 paved the way and 100% success was hardly likely three years later: we were on the right road although not at the end.

Some of the questions raised during the conference yet to be answered were:

(1) How to provide a vaccine of consistent potency capable of providing 100% immunity.
(2) The length of immunity after vaccination with killed and with live vaccine.
(3) The danger to the community of giving live vaccine orally.
(4) The means of inhibiting the growth of poliovirus, and indeed, all viruses.
(5) The prevention of complications of poliomyelitis.
(6) Did Echo and Coxsackie infections increase in communities as poliomyelitis did?

The president of the conference, Mr. BASIL O'CONNOR (U.S.A.), in closing the conference, said that the study of an uncommon disease had led to new fields. Homes had been found for some "orphans." He predicted the abolition of poliomyelitis from his country by 1958, and he wished all international problems could be solved with like harmony.

ENDOCRINE ASPECTS OF BREAST CANCER

A CONFERENCE on the endocrine aspects of breast cancer was held in Glasgow on July 8–10, under the auspices of the University. The chairman was Prof. C. F. W. ILLINGWORTH.

Clinical Studies

Sir STANFORD CADE (London) described a series of 170 patients with disseminated breast cancer who had been submitted to adrenalectomy during the past 4½ years. In 60% there was temporary control of the disease. He also found that neither histology nor age had any effect on response to operation, but that hormone dependency could be predicted in a small number of cases by the response to previous hormone therapy.

Dr. J. HELLSTRÖM (Stockholm) described a further series of 162 bilateral adrenalectomies. A remission had been noted in 51%. He could find no factors which appeared to influence remission after operation, apart from the stage the cancer had reached.

Dr. R. LUFT (Stockholm), in describing a series of 60 patients treated by surgical hypophysectomy, reported a remission-rate of 58%. He thought that complete hypophysectomy was not essential for remission. In a series of 109 patients treated by surgical hypophysectomy, Dr. BRONSON S. RAY (New York) stated that 53 had had a remission. He concluded that the contra-indications to operation included increased intracranial pressure or progressive paralysis from brain metastases, seriously reduced pulmonary function from lung metastases, and advanced hepatic disease. He also noted that no further treatment had been of any avail after hypophysectomy, except in 1 patient who had had some benefit from androgen therapy.

Mr. H. J. B. ATKINS (London) presented a comparative series of 60 cases, half of which had had adrenalectomy and half hypophysectomy. Although the results from hypophysectomy appeared better than those from adrenalectomy, this difference was not significant. He also showed that as more cases were added to his series, this difference was getting smaller.

Mr. A. P. F. FORREST (Glasgow) described the implantation of yttrium 90 into the pituitary fossa. This had proved a suitable agent for the production of necrosis limited to the pituitary and no serious optical defect had resulted. In a comparative series treated by pituitary implantation or adrenalectomy, a similar number of patients had received benefit from either procedure.

Dr. J. D. N. NABARRO (London), describing 12 patients who had had pituitary-stalk section and in whom the 24-hour neck uptake of I^{131} fell, said there were 6 who showed clinical remission. Further studies had suggested that pituitary function remained reduced or absent following this procedure. Prof. H. L. Sheehan (Liverpool) thought it did not matter if there was regeneration of blood-vessels into the pituitary gland as there was little chance of a return of function.

Dr. O. H. Pearson (New York) described the physiological effects of bilateral adrenalectomy and hypophysectomy. The adrenalectomised patient could not withstand a low-salt diet because of the absence of aldosterone secretion, but the hypophysectomised patient could conserve sodium and the urinary aldosterone secretion was increased in response to dietary sodium restriction. He concluded that adrenal aldosterone secretion was not under pituitary control. Dr. C. FRANKSSON (Stockholm) observed that the blood-pressure was lowered after adrenalectomy only if it had previously been above normal.

Pathological Studies

Dr. W. MÜLLER (Cologne) said that the pharyngeal pituitary could be found constantly in man. Comparison of pharyngeal pituitaries in patients with an intact sellar hypophysis with those from patients with destruction of the sellar hypophysis shows cytological signs of activity in the latter group. He concluded that after destruction of the sellar hypophysis the pharyngeal pituitary was a potential producer of secreting eosinophils.

Prof. T. E. SYMINGTON (Glasgow) referred to the morphological and histochemical changes in the adrenal gland in response to corticotrophin (A.C.T.H.). He described the correlation between the histochemical changes and the output of steroids in the adrenal vein. Dr. A. R. CURRIE (Glasgow) further described the results of histochemical studies on the anterior hypophysis. He gave details of the factors influencing the yield of various stored hormones from the "normal" human pituitary and the results of immunological studies on human anterior pituitary hormones.

Dr. A. T. SANDISON (Glasgow) gave an account of a post-mortem study of the breasts of 563 women over 50 years of age. Less than 50% showed a completely inactive breast parenchyma. He also noted that neither castration with or without adrenalectomy nor ablation of a considerable portion of the pituitary necessarily led to epithelial atrophy.

Chemical Studies

Dr. J. A. LORAINE (Edinburgh) emphasised that the present assay methods for growth hormone and prolactin were not sufficiently reliable for routine use in clinical studies. When estimating pituitary gonadotrophins in urine, however, the excretion was higher in patients with mammary cancer who later deteriorated during a six-week course of treatment with stilboestrol, than in those who improved or stayed the same. This group of patients also had a significantly higher level of urinary gonadotrophin compared with a "control" group of subjects of similar age.

Dr. J. B. BROWN (Edinburgh) reported on the urinary excretion of œstrogens by postmenopausal women with breast cancer before and after the administration of œstradiol-17β. He noticed no difference in the excretion by these patients compared with that of a similar "control" series.

Mr. F. C. GREENWOOD, PH.D. (London), said that satisfactory agreement between chemical and biological methods of œstrogen estimation was not found in urine studies after adrenalectomy and hypophysectomy. This discrepancy was due to the interference in the chemical method caused by cortisone metabolites and that a minor modification of the existing method gave a satisfactory agreement. Results might be anomalous if the patients were receiving certain drugs, notably laxatives.

Dr. E. F. SCOWEN (London) said that regression could occur after hypohysectomy whether œstrogens had disappeared from the urine or not. Dr. E. DICZFALUSY (Stockholm) had found small but significant amounts of both œstrone-like and œstradiol-like Kober chromogens in the urine of 3 out of 10 oöphorectomised-adrenalectomised patients. In countercurrent distribution studies the partition characteristics of the saponified, methylated, and chromatographed urinary extracts from these 3 patients resembled very closely those of authentic œstrone and œstradiol methyl ethers. The behaviour of some of the derivatives of these substances, however, indicated that these Kober chromogens were most probably not identical with the methyl ethers of œstrone and œstradiol-17β. A fairly sensitive bio-assay method did not reveal the presence of any œstrogenic activity in the extract. Dr. GUNNAR BIRKE (Stockholm), in an investigation of 14 patients, reported that there appeared to be no correlation between the clinical response to endocrine ablation and the excretion of 17-ketosteroids, corticosteroids, and œstrogens.

Dr. T. F. GALLAGHER (New York) described an investigation of the œstrogen content of the urines of

oöphorectomised-adrenalectomised women after the administration of œstradiol containing carbon 14. Following treatment with β-glucuronidase, the ether extract of these urines was analysed by the chemical method and by the technique of reverse isotopic dilution. A third criterion was provided by calculation of the radioactivity under each of the peaks after the urine extracts had been separated by means of liquid-liquid countercurrent distribution. The results of all the analyses showed a remarkable agreement.

Mr. A. E. KELLIE, PH.D. (London), remarked that an analysis of the neutral 17-ketosteroid fraction from urine provides an alternative method of following the completeness of adrenalectomy and hypophysectomy. In his series the excretion pattern of patients before operation did not differ from normal though the total excretion was in or below the normal range. Following the operation the excretion of 17-ketosteroids fell markedly in each case, but did not become zero even when cortisone was withheld for periods of up to 4 days. Apart from the recognised 11-oxy-17-ketosteroid metabolites of cortisone, other 17-ketosteroids were present which might be of endogenous origin.

Mr. J. L. HAYWARD (London) discussed the ratio of 11-deoxy-17-ketosteroids to 11-oxygenated or hydroxylated-17-ketosteroids. In a series of 16 patients with advanced carcinoma of the breast he found that in those patients who benefited from either adrenalectomy or hypophysectomy the ratio was greater than 1 and in those who failed to benefit, the ratio was less than 1.

Dr. R. HOBKIRK (Glasgow) reported that the levels of ætiocholanolone, androsterone, and dehydroepiandrosterone diminished to low values following pituitary implantation or adrenalectomy. Dehydroepiandrosterone had not been identified in the urine following either of these treatments. In the few cases where pituitary implantation or adrenalectomy had not resulted in the expected large decrease in excretion, failure to benefit from surgery was evident. Dr. LARS-OLOF PLANTIN (Stockholm) described failure to find any correlation between the relative or absolute amounts of 11-oxy- and 11-desoxy-17-ketosteroids, or the 17-ketosteroid pattern, or corticosteroid excretion, and clinical response to surgical treatment.

Experimental Studies

Prof. S. J. FOLLEY (Reading) reported that the hormonal tetrad—œstrogen, progesterone, prolactin, and somatotrophin—was required for full experimental mammary development in hypophysectomised rats. He said that it was an open question whether somatotrophin had direct mammogenic properties or played a a "supporting" rôle as a general regulator of the metabolic environment of the mammary gland, and in this connection the actions of insulin and the glucocorticoids might need consideration.

Dr. J. FURTH (Boston) described an experimental analysis of factors determining proliferative and secretory activity of the mammary gland following the transplanting of mammary-gland-stimulating pituitary tumours. These tumours could cause full development of the mammary gland with secretion in gonadectomised rats; œstrogens appeared to act indirectly by stimulating the mammotrope and progesterone appeared to enhance the proliferative activity. Although metastasising carcinomas were not produced, consideration of available data led him to suppose that mammotrope activity was a prerequisite for cancer development. Dr. L. SEVERI (Perugia) described the transmission of mammary tumour agent from male parents in hybrid mice. He said that since in males the mammary tumour agent is eliminated through the genital organs which are under the control of the sexual hormones, the hypothesis may be advanced of the hormone-dependence in the transmission of the mammary tumour agent from males.

Dr. O. MÜHLBOCK (Amsterdam) described an investigation of the growth-rate of primary mammary cancer in different strains of mice treated by various hormones. He was unable to achieve complete regression of the tumours and only in a few cases was a slower growth-rate observed after treatment. With few exceptions, the growth-rate of spontaneous and transplanted mammary tumours in mice seemed to be hormone-independent, although the precursor hyperplastic nodules seemed to be hormone-dependent.

Dr. K. MAINZER (Chicago) had found that the benign mammary fibroadenoma of the rat responded to all methods of treatment which are known to restrain human mammary cancer. He described the effects on this tumour of the administration of œstrogens, progesterone, and androgens.

Dr. L. FOULDS (London) described the effect of pregnancy on certain mammary tumours, in force-bred mice. In his series certain of the tumours progressed during pregnancy and regressed following parturition. Occasionally, however, one of these tumours might become autonomous after parturition and then no further regression was noted.

Prof. G. HADFIELD (London) gave an account of the mammary growth response which could be induced in hypophysectomised weanling male mice of the A_2G strain, after the subcutaneous injection of the urine of normal pre- and post-menopausal women. He claimed that his results strongly suggested that the mammotrophic agent present in human female urine was pituitary prolactin.

Mr. R. E. WILLIAMS (Glasgow) had repeated Professor Hadfield's experiments but had been unable to get similar results.

Mr. J. W. JULL, PH.D. (Leeds), postulated that mammary cancer, including the human disease, may be of an œstrogen-type stimulated by œstrogen, or of a progesterone-type stimulated by progesterone, the type arising in any individual being determined by the overall hormonal conditions existing in that person.

Dr. A. G. JESSIMAN (Boston) described a study of a series of patients using urine œstrogen and calcium excretion studies. He concluded that over 80% of mammary cancers are hormone-stimulated and that hormone-dependency persists to the terminal stages of the disease.

Special Articles

HEALTH SERVICE ESTIMATES

THE revised estimates for the National Health Service in 1957–58 [1] set the gross cost for England, Wales, and Scotland at £639,526,995, compared with £607,229,300 in 1956–57. Appropriations-in-aid are expected to amount to £103,186,250 in the current year, compared with £78,329,270 in 1956–57; and the estimated net cost, after deduction of this sum, is £536,340,745—an increase of £7,440,715 on the net total of £528,900,030 in 1956–57.

The estimate for gross expenditure on the hospital, specialist, and ancillary services is £409,698,415 in 1957–58, compared with £386,697,515 in 1956–57. The estimated capital expenditure is £5,622,000 greater at £20,524,000, and the estimated revenue expenditure £16,267,000 greater at £376,793,000.

The general medical, dental, pharmaceutical, and supplementary ophthalmic services are estimated to account for £181,688,330 in 1957–58, compared with £174,433,655 in the previous year. The new total includes £69,940,000 for the general medical services (an increase

1. 1957–58: Civil Estimates (Revised Estimates) for the National Health Service, for the year ending March 31, 1958. H.M. Stationery Office. Pp. 57. 3s.

of £4,141,000 on the total in 1956–57) and £39,634,000 for the general dental services (an increase of £3,939,000). The gross total for the pharmaceutical services is estimated at £57,815,000. This is a decrease of £1,546,000 on the gross total for the previous year; but these figures allow for payments by patients, which are expected to total £13,348,000 in 1957–58, compared with £8,866,500 in 1956–57.

The estimates take account of the provisions of the National Health Service Contributions Bill, now before Parliament,[2] and of increases in the remuneration of doctors, dentists, and ancillary staffs in the hospital service, and of general medical and dental practitioners.

Medicine and the Law

Proof of Diminished Responsibility

IT is a well-known rule of criminal law that the prosecution must prove their case beyond reasonable doubt. But suppose, on a charge of murder, the accused pleads the new defence of diminished responsibility set up by the Homicide Act, 1957. Clearly, it is for the defence to prove their case—but what standard of proof is required? Proof beyond reasonable doubt, or, as in civil cases, the balance of probabilities?

In the case of Ronald Patrick Dunbar, who was recently convicted of the capital murder of a 82-year-old widow, the judge gave no clear direction to the jury on this point.[3] The Court of Criminal Appeal has now held that it is sufficient to show that the balance of probability is in favour of defence and, in consequence, overruled Dunbar's conviction.[4]

At the trial, a psychiatrist was called for the defence and, although the evidence he gave was somewhat vague, he did say that in his opinion the prisoner was a psychopath and suffering from abnormality of mind. The prison doctors were firmly of opinion that he was not a psychopath, and this issue was left to the jury by the judge. No fault could be found with the judge's summing-up as to what constituted diminished responsibility. The appeal was based solely on whether the judge had given a proper direction to the jury as to the burden which was on the defence when setting up a plea of diminished responsibility. Counsel for the defence had contended that the jury were concerned only with the balance of probabilities, but the prosecution had argued that the defence had to prove beyond reasonable doubt that the accused came within the section.

In his summing-up, the judge had said that "fairly and squarely the burden is placed on the defence." A little later on he told the jury: "If you are not satisfied that he was suffering from such abnormality as I have been dealing with, then . . . you must take it from me that it is your duty to reject this defence. Something has been said about balance of probabilities and about the burden of proof, and about doubt and so on. I prefer to leave you with the simple words of the Act of Parliament."

Giving the judgment of the Court of Criminal Appeal, the Lord Chief Justice said that this was not an adequate direction. It must be pointed out to a jury that the burden on the defence was not as heavy as the burden on the prosecution. His Lordship cited the direction given in a case in Scotland, where diminished responsibility has for many years been a defence to a charge of murder. "If you think the balance of probability to be in favour of that defence, you must sustain it. . . . If on the other hand . . . you cannot find in the evidence before you material to justify the conclusion that the balance of probability is in favour of the defence, then . . . it is your duty to return a verdict of murder."[5]

His Lordship thought that, if this direction had been given to the jury in Dunbar's case, the jury would very likely have returned the verdict they did. In the circumstances, however, the Court thought it right to direct that a verdict of manslaughter should be entered instead of capital murder.

Suppliers Reprimanded

Because the medical order did not contain the words "two-way stretch," the relief manager of a firm of surgical appliance suppliers refused to supply a woman patient with an elastic stocking. As a result, Birmingham Health Executive Council has "severely reprimanded" the firm for contravention of the terms of service.[6]

Danger of Plastic Bibs

A verdict of accidental death was recorded on a boy, aged 3 months, who died of asphyxia. He was wearing a plastic bib and when he dribbled the bib stuck to his face and made it impossible for him to breathe.[7] The coroner, who had met a similar case before, criticised this kind of bib and said the older type was better. He hoped the dangers of plastic bibs would be made more widely known.

Parliament

Ancillary Dental Workers

ON July 10 the regulations giving statutory existence to dental hygienists were approved by the House of Commons. In introducing them Mr. J. K. VAUGHAN-MORGAN, parliamentary secretary to the Ministry of Health, said that they were the first regulations to be made by the recently established General Dental Council. He hoped that this experiment would help the shortage in dentistry.

Dr. EDITH SUMMERSKILL wondered why there had been so much delay in introducing these simple regulations when so many children were in need of conservative treatment. In New Zealand, where these workers had long been accepted, they not only cleaned, polished, and scaled children's teeth but also filled and extracted. She was not pressing that extractions should be included in the duties of British dental hygienists, but she did ask why filling was not included. Since a qualified dentist would be in attendance why should the ancillary worker not do something which the child needed. Otherwise these regulations would not serve the purpose. Mr. SOMERVILLE HASTINGS would also have been happier if the regulations had allowed the hygienists to undertake some stopping or, at any rate, preparation of the teeth for stopping. Mr. VAUGHAN-MORGAN agreed that Parliament had intended that an experiment should be made of permitting dental hygienists to fill teeth. The Privy Council had obtained information from the General Dental Council on the case for such an experiment based on experience in New Zealand, but they had not yet directed that it should be undertaken.

QUESTION TIME

Eligible in 1958

About 3500 general medical practitioners and part-time specialists will in 1958 become entitled to draw superannuation benefit on retirement from the National Health Service. Figures for doctors employed full-time in hospital are not readily available.

Milk Tablets for Schools

At 15 schools in England and Wales milk tablets are given to the children in place of fresh or reconstituted milk. A satisfactory supply of fresh milk cannot be arranged for these schools and the children prefer tablets to reconstituted milk.

2. See *Lancet*, 1957, i, 989, 1046.
3. See *Ibid*, p. 1095.
4. *Times*, July 6, 1957.
5. Lord Advocate *v.* Braithwaite (1945).
6. *Manchester Guardian*, July 8, 1957.
7. *Times*, July 16, 1957.

In England Now

A Running Commentary by Peripatetic Correspondents

SHE was a pleasant farmer's wife, aged about 35, who came up from the country, looking rather frightened as she came into the outpatient department. After our interview I was able to reassure her that her symptoms were entirely the result of anxiety; she left looking relieved and I wrote to her family doctor giving my views. I was surprised to receive from him, by return, the following letter:

Many thanks for your helpful letter regarding this lady. She is a hard-working, kindly person, who has been my patient for thirty years, and to confirm your opinions, you will be interested to hear that over the whole of that period, various sub-species of cheiroptera have inhabited her belfry. Sometimes they have periods of uneasy sleep, and at others I am nearly driven to distraction by the loud carillons caused by their flapping against the bells. Thirty years ago she was only one of a few people similarly afflicted, but now you can parade them four abreast in long columns marching to my surgery. They are guided there by stewards kindly supplied by some well-known drug firms. Vans filled with tranquillisers rush along the streets in escort. I think that a course of *Pilgrim's Progress* and the New Testament is an avenue of treatment worth exploring; my grandmother even achieved considerable success with a skelp on the lug. Please forgive this outburst, but, like the Ancient Mariner, I have to get it off my chest.

When I replied expressing my amusement, back came a second letter:

I am afraid you must have thought that Mrs. X did not merit my diatribe—and you would be perfectly right. It was so long since I referred her to you [a just commentary on our outpatient waiting-list] that my first glance at your letter led me to assume that the subject was her mother-in-law (aged 64 years). About Mrs. X senior, from dozens of physicians down the years, have come hundreds of letters, but she is so pleasant that I have no difficulty in repressing my first involuntary shudder when she comes in to "talk about myself." Her equally charming and attractive daughter-in-law shows some signs of a similar career. I often think that when she walks out with mother-in-law she should have an L-plate pinned to her back—but please acquit me of being too hard on her.

I wonder how many family doctors have recently felt obliged to write similar letters?

* * *

Your correspondents (July 6, p. 46) who, as a result of their morale-building efforts in a mental hospital, are left with 1000 unwanted chamber pots are happily not alone in facing this problem. In the miscellaneous column of a June issue of *Exchange & Mart*, a shipping line also admitted that they had 1000 unwanted chamber pots and offered to give them away in lots of 100 to anyone who would collect from Tilbury.

Here then is the first inkling of a national problem of growing importance, needing surely a national survey to determine its extent and to allow proper allocation of storage facilities. The passing of the chamber pot marks the end of personal-handling problems and pushes the nation into the hygiene bracket where poliomyelitis replaces typhoid as the greatest fear. It is not yet too late to record this change with a national type collection, perhaps in a quiet corner of the Victoria and Albert. One undamaged specimen from each of the counties of Britain would make a fine start.

No doubt your correspondents will consider this information a hindrance to their task of getting rid of the 999. No person of imagination could pass by this magnificent offer by a notable shipping line. The cautious among your readers may ask for further information. Are they first or third class? Are there vintage specimens from the days of sailing ships? Is there possibly a rare specimen from purchase in a foreign port. Are they, like the postage stamps, genuine unsorted collections? Against this what can a hospital management committee offer? Are we really in favour of bulk purchasing?

* * *

The fellow was beginning to annoy me: I'd rather have been with my stamp album. It was a pity, and what had begun as a perfect blue-skied Saturday morning developed into one-sided conversation. I began to suspect he was a "legal eagle" or a business tycoon —but no, if so he would be sailing a cruiser instead of a one-design with a volunteer single crew. As soon as he heard I was a doctor he sounded off "You medicos complain bitterly about time wasted by advertising puffs, samples, brochures, and drug salesmen, but you have only yourselves to blame." He held the main sheet and tiller in one hand and bit deep into an apple with the other. "Accept the challenge. Stop being parfit gentil knights. Use the redundant fighting fund of one of your many lost causes. Carry the fight into their camp —advertising ethically where possible, of course. 'Be popular. Make money and have fun. Ventriloquism and hypnotherapy combined.' Or, 'You too can be a Life Assurance Medical Examiner. Interesting. Big pay. No bad debts. Security. Learn this fascinating work easily, quickly.'" He spat out a pip. My susceptibilities pricked. "I'm only a M.O.H. but I'm sure——" "Well there you are," he roared above a heavy gust and a flapping jib, "'Public Health Men! Don't die of boredom in an abdast. Our movable concrete ablution disinfestor is yours for one month free. Send no money.'" He eased the main sheet. "All right? 'You too can get laughs and frighten your relatives. Impress them with a custom-built famous-make E.C.G. No-risk Plan. Buy direct—save 50%.'"

Trying to keep my voice even and my fangs from showing, I asked "Where on earth does this lead us. If one did place such advertisements and even get replies who——" "The primary intention is to carry the scrap to them. Scare them. Nauseate them. Remember to keep in reserve stunts like 'Amuse the kids. Amazing medical hobby. Amazon Jivaro Shrunken Heads with your own P.M. set.' You'll find the big firms will ease off to counterbalance these methods—and as you are not *really* trying to sell anything you stop as soon as you get results. Simple."

He was ruining my half-day. As he turned to throw the core overboard the boom came about and carried away the backstay, and next moment we were struggling in the Solent. As we clung to the submerging hull he shouted "Die a rich man. You CAN take it with you. Positive proof. Big Kit free. Change your wealth to guaranteed ætheric matter. Amazing offer!"

I was almost glad to lose sight of his balding head like a roué with a crewcut toupé, when his grip on the boat's hard chine weakened. Perhaps he was right —who knows?

* * *

Sir Ernest Gowers in *The Complete Plain Words* refers to the device of changing names that have acquired unpleasant associations. "But," he adds, "it has its limitations. If the unpleasantness attaches to the thing itself, it will taint the new name . . ." It is interesting to think of the recommendation of the Royal Commission on Mental Deficiency in this light. The terms "idiot" and "imbecile," the report suggests, should be replaced by the term "severely sub-normal personality." I imagine myself in twenty years' time reading *The Magnet* to my grandchildren:

The Famous Five stood wondering who could have done such a stupid thing. Then suddenly they saw the Owl of the Remove peering at them through his glasses.

"I say you fellows——"

"Bunter!" cried Harry Wharton. "Why of all the——'

"Billy Bunter!" echoed Bob Cherry. "Of all the blithering severely sub-normal personalities——"

"The severely sub-normal personalitiness of the esteemed Bunter," murmured Huree Ramset Jam Singh, "is terrific."

* * *

I was remonstrating the other day with a chronic bronchitic and advising him to reduce his smoking. I pointed out the risk of cancer. He assured me that he would stop smoking at the very first sign of cancer. I hadn't the heart to disillusion him.

Letters to the Editor

CONSULTANT AND SPECIALIST

SIR,—The letter by Mr. Holmes Sellors and Professor Strachan (July 13) will find an echo in the heart of all those who, by virtue of their training, qualifications, and clinical standards, know that they are providing a consulting service in all but name. Their work is of no less quality than that of many of their senior colleagues who obtained their grading in easier times, and often by the accident of war-time military exemption.

I refer to the many senior registrars who managed to avoid the necessity to emigrate by taking S.H.M.O. posts, in which they have frequently raised the standard and extended the scope of the work, in some cases managing to continue their research. It is no exaggeration to say that some consultants have learnt much from such assistants: few hospital doctors can fail to call such a case to mind.

Nobody can fully appreciate the ignominy of the S.H.M.O. grade (when one's whole life and work has been directed to achieving professional maturity) unless he has experienced it himself. If Mr. Holmes Sellors and Professor Strachan feel that the public deserves to have the right men in the right place, could they inquire why some regional boards are failing to advertise consultant vacancies as they arise? And could they say what effect representations by Mr. Holmes Sellors's committee along these lines are having in the appropriate quarter? And would they please remember, when the time comes, that, for a variety of reasons, not all consultants are keen that their assistants should be upgraded in situ?

There can surely be no grounds which justify the employment of fully trained practising medical men, carrying out consultant work in wards and outpatients, at salaries approximately two-thirds of the net income of the average general practitioner, and with no expense accounts or income-tax allowances.

It is a sad reflection of the loss of dignity suffered by a section of our noble and learned profession, that I should feel it necessary to ask you to withhold my name.

S.H.M.O.

SIR,—Would it not be feasible for extra consultant posts to be created in specialties where there is a considerable amount of emergency night work—e.g., surgery, obstetrics, and anæsthetics?

In many hospitals a great deal of the emergency work is carried out by junior staff, which is, in my opinion, wrong. Most emergencies demand skill and experience, which junior staff do not always possess.

If new consultant posts were created in areas where there is a fair amount of emergency work, many senior registrars could be profitably absorbed.

Then a rota could be worked out for the area, a consultant doing emergencies for one week and then for the next two or three weeks doing routine consultant work, with no emergencies.

Stamford, Lincs H. J. RICHARDSON.

"STRESS" AND MENTAL DISORDERS

SIR,—Dr. Atkin's conclusions (July 6) that the stress and strain of modern life do not account for the increase in neurosis are supported by my own views. Natural life is a story of stress and strain, from the lowest to the most complex organisms. We are the only form of life capable of changing our environment and our relationships with each other to our advantage (as we see it). We are doing so in the Welfare state and creating a safe, static, unexciting medium in which to exist. This creates boredom and frustration and it may be these states which engender neurosis. For neurosis appears to me to be associated with nervous energy in excess of requirements for a given existence, which acts as a disintegrating force in the nervous system, creating storms, depressions, and anxiety in turn.

There is another possible explanation for the increase in nervous disorders of a superficial type. The chances of developing serious organic disease have been greatly reduced by active immunisation, public-health measures, and antibiotic therapy, to mention only three factors. Perhaps it is from among those who would have fallen victims to the scourges and endemic diseases of the past that the large majority of victims of nervous diseases arise?

Romford, Essex. P. D. MULKERN.

SEX CHROMOSOMES AND HUMAN SEXUAL DEVELOPMENT

SIR,—I would like to congratulate Dr. Danon and Dr. Sachs on their excellent paper on this subject in your issue of July 6. I am particularly interested in their suggestion that those cases of male pseudohermaphroditism which they refer to as "testicular feminisation" may have an abnormal chromosomal constitution, which they suggest may be XXY. However, I am rather unhappy about the term "testicular feminisation," and the emphasis given to Morris,[1] in whose paper the term first appears. It does less than justice to Goldberg and Maxwell,[2] whose case-report, published in 1948, was accompanied by a search through the literature of hundreds of cases of pseudohermaphroditism which yielded only 7 with the appropriate criteria; and pays even less respect to Schneider, Van Ommen, and Hoerr [3] who discovered 6 more cases in the literature and added 6 more of their own. Schneider et al. were the first to point out the familial tendency, and they stated that urinary gonadotrophin was not increased—a finding similar to that of Armstrong [4] and of Beattie, Champ, and Swyer.[5] There therefore seems little justification for the supposition that the pituitary in these cases is insensitive to gonadal secretions. Incidentally, Sir, in your leading article, where you refer, unhappily I feel, to "Morris's testicular feminisation," you are manifestly in error in saying that "by nuclear sexing they are female."

I do not understand why Dr. Danon and Dr. Sachs should, in their table I, include the Klinefelter syndrome among the male pseudohermaphrodites; surely the genetic females among them (the "true Klinefelter" cases of Warren Nelson [6]) are, if anything, female pseudohermaphrodites. It is wrong to suppose that in these cases the pituitary is "strikingly insensitive to the appreciable doses of androgens secreted by the normal Leydig cells of the testes." The Leydig cells are far from normal morphologically and are frequently present in excess—a picture reminiscent of the adrenal cortex in congenital adrenal hyperplasia, where the hyperactive pituitary is not insensitive to corticotrophin (A.C.T.H.)-inhibiting steroids, but is insufficiently subject to their influence. In any case, it is well known that physiological amounts of androgens administered to castrated animals fail to prevent the overproduction of pituitary gonadotrophins—hence the predication of a second testicular hormone, "inhibin" or X hormone (see, for example, Howard et al.[7]).

One further correction on a matter of fact is necessary. In your leading article, it is averred that no combination of hormones has yet made an XY breast secrete milk; in so far as treatment with œstrogens, progesterone,

1. Morris, J. M. L. *Amer. J. Obstet. Gynec.* 1953, **65**, 1192.
2. Goldberg, M. B., Maxwell, A. F. *J. clin. Endocrin.* 1948, **8**, 367.
3. Schneider, R. W., Van Ommen, R. A., Hoerr, S. O. *Ibid*, 1952, **12**, 423.
4. Armstrong, C. N. *Proc. R. Soc. Med.* 1953, **46**, 301.
5. Beattie, D. C., Champ, C. J., Swyer, G. I. M. *Brit. med. J.* 1953, i, 1369.
6. Nelson, W. O. *Acta endocr., Copenhagen*, 1956, **23**, 227.
7. Howard, R. P., Sniffen, R. C., Simmons, F. A., Albright, F. *J. clin. Endocrin.* 1950, **10**, 121.

somatotrophin, and prolactin, together with repeated breast-pump application, has led to the expression of colostrum from the breasts of a male transvestist (who, having previously been known to father children, may be presumed to be XY !), Foss [8] has in fact succeeded in achieving just that.

University College Hospital, London, W.C.1. G. I. M. SWYER.

MULTIPLE MYELOMATOSIS AND MACROGLOBULINÆMIA

SIR,—We wish to confirm the report by Miss Silberman (July 6, p. 26) of the usefulness of starch-gel electrophoresis for the differentiation of multiple myelomatosis from macroglobulinæmia. One of us (A. H. Z.) actually demonstrated this to the Association of Clinical Biochemists at the joint meeting with the Biochemical Society held at Newcastle upon Tyne on June 29.

Department of Pathology, Royal Victoria Infirmary, Newcastle upon Tyne, 1. A. L. LATNER
ANGEL HABIB ZAKI.

SIR,—Following the preliminary communication of Miss Silberman, it is perhaps interesting to recall that we made similar observations using agar-gel electrophoresis.[9 10]

We agree with Miss Silberman concerning the effect of size and shape of the protein molecules on their behaviour during electromigration in a gel. Incidentally, agar gel is much more easy to make and handle than starch gel.

Laboratory of the Medical Clinic, University of Ghent, Belgium. R. J. WIEME.

EMPLOYMENT OF CHRONIC MENTAL PATIENTS

SIR,—Like Dr. Miller (July 13) we have lately arranged for some of our patients to earn money by work outside the hospital. From their two seasons as potato-pickers we have learnt some useful administrative lessons about methods of payment by farmers and distributing their earnings among the patients.

Payment

Our aim was that every patient who could benefit from the work should be allowed to join the party. We realised, however, that many would be "passengers" and this might cause some annoyance to the farmer who thought he was paying money for nothing and for this reason payment at so much an hour per man was not a good idea. Our final arrangement with the farmers was that payment should be on a basis of so much an acre and then it did not matter how many patients there were in the party, whether they were good workers or bad, provided they could keep up with the digging machine. Incidentally, in a previous year's work we had found that $2^1/_2$ unselected patients would do one normal man's work but for reasons of policy it was not wise to ask for payment on this basis because the farmers did not understand.

Earnings

During the second season the patients earned £1160. Transport cost £265, the patients contributed £300 towards the cost of their board at the hospital, and £600 was distributed among them as earnings. If we had followed the method of distribution laid down in the Ministry of Health circular, the patients would have received so little money that we would not willingly have contemplated potato-picking again. As a result of representations the Ministry agreed to our suggestion that after the necessary expenses had been deducted the money should be divided so that two-thirds went to the patients and the remaining third to the hospital. The Ministry agreed to this method because the work was arranged between farmer and hospital and not between farmer and patient; in addition the patients were not constantly employed. Although the patients might have been given more, I think this settlement not unreasonable. Their earnings ranged, according to the hours they worked, from a few shillings to nearly £9. The rate per day with all deductions was 5*s.* 6*d.*

When it came to the distribution of the money each patient and his charge nurse were told what he had earned and he was asked how he wished to spend it. He was asked to spend some of it on some article of clothing or footwear so that he could have something whereby to remember his excellent work, but he was under no compulsion to agree to this. As it turned out many bought shoes, slippers, pullovers, and so on. Others wanted to give the greater part of it to their next of kin who faithfully visited them, or had them home on leave, and where the homes were poor this must have been welcome. Some wanted to keep a portion so that they could have a little extra to spend themselves when they went on leave, and nearly everyone was anxious to have a portion set aside so that they might have an all-day coach trip.

I have no doubt that the proper place for a patient to work after many years of unemployment is in a normal workshop or place of labour. I do not think that sheltered employment within the hospital is the answer—valuable as it may be when the ideal cannot be attained—because this is one more way of making life agreeable for the patient within the hospital and perhaps tempting him and his doctor alike to postpone the question of his discharge.

Willerby, Yorks. J. A. R. BICKFORD.

THE HUMAN HERITAGE

SIR,—It takes courage these days for a scientific worker to present an idea based on his clinical observation only. Sir Heneage Ogilvie is, therefore, to be congratulated when, in his Wood Jones lecture (July 6) he makes this striking remark: "He (the patient) is either unhappy because he has got cancer or he is going to get cancer because he is unhappy."

Forty-three years ago, Sigmund Freud wrote: "A strong egoism is a protection against disease, but in the last resort we must begin to love in order that we may not fall ill, and must fall ill if, in consequence of frustration, we cannot love." Behind the remarks of each of these writers is a life time of experience, diverse, no doubt, but in each case full of clinical observation. This is what Freud wrote about the importance of observation:

"... [a science founded upon constructions arrived at empirically] will not begrudge to speculation its privilege of a smooth, logically unassailable structure, but will itself be gladly content with nebulous, scarcely imaginable conceptions, which it hopes to apprehend more clearly in the course of its development, or which it is even prepared to replace by others. For these ideas are not the basis of the science upon which everything rests: that, on the contrary, is observation alone. They are not the foundation-stone, but the coping of the whole structure, and they can be replaced and discarded without damaging it."

Both of these quotations come from a paper by Freud called On Narcissism: an Introduction (in *Collected Papers*, vol. IV) which, though not easy reading, will repay careful study by anyone whose mind is not clogged by a surfeit of statistics. The danger of these is that they enshrine, as holy relics, the observations on which they are based, barring the way (because of their apparent finality) to further observation, which is, as it were, rendered unnecessary. Indeed, is there not a further danger that psychology will fall into the hands of those who, without the personal observation of their own reactions that is obtained through psycho-analysis and without personal observation of those ill people through whom knowledge of the normal is acquired, dazzle the eyes with statistics *based on the observations of others*?

London, W. 1. DAVID RUMNEY.

8. Foss, G. L. *J. Endocrin.* 1956, **14**, 6.
9. Wieme, R. J. *Klin. Wschr.* 1956, **34**, 1264.
10. Wieme, R. J. *Rev. belge Path.* 1957, **25**, 62.

POSTOPERATIVE COLLAPSE DUE TO ADRENAL INSUFFICIENCY

SIR,—In their very interesting article Mr. Slaney and Mr. Brooke (June 8) make the point that adrenal glands which have been depressed by cortisone therapy, while capable of producing enough steroids for ordinary daily requirements, may be unable to meet the additional requirements of severe stress.

May I ask what is the stress of any particular operation ?

What would be of profound interest and a valuable addition to their work would be details of the anæsthetic drugs used in their cases. I think the depressed adrenals are very susceptible to poisonous drugs, and anything in the nature of histotoxic anæsthesia should be used sparingly, if at all, in such circumstances.

Most patients will stand any operation and any anæsthetic for a short period, but the longer the procedure the weaker must be the anæsthetic, and as I have pointed out,[1] it is often the anæsthetist's efforts to protect his patient from shock that bring about this very thing.

Lethbridge, Alberta, Canada. J. SHEGOG RUDDELL.

DIVISION OF INTERCOSTAL ARTERIES

SIR,—The statement by Jean Cauchoix and Jean-Paul Binet that the question of how many intercostal arteries can be safely divided still remains unanswered is undoubtedly true in its application to interference with the blood-supply of the spinal cord.

Descriptions of the blood-supply of the cord by Kadyi and by Suh and Alexander (referred to by Mr. Hodgson in his letter of June 22) have established the generally accepted pattern of vascularisation, but some of the possible variations in this pattern have not yet been described.

I have recently completed a study of this problem and have examined a total of 68 cords. The results of this investigation agree with those of previous workers in that in most individuals the main supply to the lower part of the cord comes from the lower thoracic and upper lumbar segmental arteries. There are, however, a small number of notable exceptions, for in several cases there has been only one anterior radicular artery of any significant size below the cervical region. In one instance this was found arising from the posterior branch of the 6th left intercostal artery and in four other instances from the similar branch of the 8th left intercostal artery. From the anatomical appearances it would seem that individuals possessing this type of blood-supply to the spinal cord would be very likely to suffer some degree of cord damage should they have to undergo any operative procedure interrupting the circulation through the lower half of the thoracic aorta or its intercostal branches.

Anatomy Department, University of Manchester. J. B. D. TORR.

A THOUSAND CHAMBER POTS

SIR,—Dr. Munro and Mr. Williamson (July 6) pose an administrative problem: how to dispose of a thousand unwanted chamber pots in a mental hospital. Considering that mental hospitals always seem to possess beautifully tended gardens and that one also often finds a great many indoor plants in these hospitals, it might be an idea to use these pots for growing and propagating such plants. It is generally stated that for a plant to grow successfully it is essential for the pot in which the plant grows to have a hole at the bottom in order to allow for proper drainage, and this is of course by far the safest thing to do. I have, however, successfully grown some quite presentable specimens of tradescantia in glazed vessels containing instead of the crocked hole at the bottom a layer of pebbles and vermiculite for drainage. A colleague has grown a geranium plant under similar conditions.

Your correspondents do not state whether the pots in question are made of china or enamel, but either of these should prove satisfactory.

London, W.C.1. G. A. SCHMEIDLER.

THE LIVER IN HÆMOCHROMATOSIS

SIR,—In his letter of May 11, and in previous studies mentioned therein, Dr. Higginson raises several contentious issues. May we briefly outline some relevant facts recorded by other workers, so that investigators abroad will not be confounded by the apparent confusion of facts emanating from South Africa ?

Among facts previously published by others, and more recently emerging from our own studies in Durban, are :

1. Iron uptake, and in consequence hepatic siderosis, has consistently been shown to be much greater in several species of animals fed a "bad" diet as opposed to a "good" one of equal iron content.[1–3]

2. As for iron absorption in African siderotics, while recognising the fine preliminary effort made by Bothwell et al.[4] to solve this problem by the use of radioactive iron, it should be noted that of the five African siderotics studied by these workers three were females, three manifested diabetes (admittedly rare even in severe African siderotics), three were more than 60 years old, and all five were stated to be severely siderotic when their iron uptake was tested. These five cases may, perhaps, already have been fairly "saturated" with iron. Consequently, we would not regard them as a group representative of Africans with *active* siderosis. It should be remembered, too, that severe European hæmochromatotics do not consistently take up radioactive iron in excess of normal.[5] We may also mention that there is reason to believe that the apparently pathological excess uptake of dietary iron in the African may ultimately be found to vary seasonally, even in the same individual, as do other pathological conditions among Africans, more especially kwashiorkor and pellagra.

3. Strachan,[6] Gillman and Gillman,[7–9] and Becker[10] in Johannesburg, and more recently Gillman,[11] Gillman et al.,[12] and Wainwright[13] in Durban, from the study of a combined total of between one and two thousand adult African livers, all found that severe siderosis (i.e., hepatic iron contents of 0·2 to 5·4%, or about 2 to 50 times greater than the upper limits of normal) occurs in approximately 65–88% of male African livers obtained from a variety of sources in the Union.

4. Our analysis thus far, of the first 170 of 200 liver biopsies from adult African males in Durban, revealed siderosis in over 75% and cirrhosis in 36%. Among the 62 cases of frank cirrhosis, siderotic (portal) cirrhosis was found in 41 (66%), post-necrotic scarring in 14 (23%), and a combination of these two lesions in 7 (11%). These findings broadly conform with those of Gillman and Gillman[7–9] Becker[10] and even with the 1953 report of Higginson et al.[14] In this latter report these workers stated that 25 (72%) of their 35 cirrhotics were suffering from a form of cirrhosis which was ". . . clearly a more advanced degree of the fine portal type" usually being associated with severe siderosis and showing "minimal bile duct hyperplasia." Only 9 (26%) of the 35 cirrhotic livers studied by them at that time "showed a coarse multilobular cirrhosis"—the latter presumably referring to post-necrotic scarring. In 1957, however, Higginson et al.[15]

1. Ruddell, J. S. *Brit. med. J.* 1956, i. 925.

1. Kinney, T. D., Hegsted, D. M., Finch, C. E. *J. exp. Med.* 1949, **90**, 137.
2. Rather, L. J. *Amer. J. Med.* 1956, **21**, 857.
3. Finch, C. A., et al. *Blood*, 1950, **5**, 938.
4. Bothwell, T. H., van Doorn-Wittkampf, H. van W., duPreez, M. L., Alper, T. *J. Lab. clin. Med.* 1953, **41**, 836.
5. Finch, S. C., Finch, C. A. *Medicine*, 1955, **34**, 381.
6. Strachan, A. S. M.D. thesis Glasgow, 1929.
7. Gillman, J., Gillman, T. *Arch. Path.* 1945, **40**, 239.
8. Gillman, J., Gillman, T. *Lancet*, 1948, i, 169.
9. Gillman, J., Gillman, T. Perspectives in Human Malnutrition. New York, 1951.
10. Becker, B. J. P. *Leech*, 1944, **15**, 15.
11. Gillman, T. Ciba Colloquia on Ageing, 1957, **3**, pp. 104, 188.
12. Gillman, T., Lamont, N. McE., Hathorn, M., Canham, P. A. S. *Lancet*, 1957, ii (in the press).
13. Wainwright, J. *S. Afr. J. Lab. clin. Med.* 1957, **3**, 1.
14. Higginson, J., Gerritsen, T., Walker, A. R. P. *Amer. J. Path.* 1953, **29**, 779.
15. Higginson, J., Grobbelaar, B. G., Walker, A. R. P. *Ibid*, 1957, **33**, 29.

reported 39 of 48 cases (82%) with "post-necrotic cirrhosis" associated with ". . . numerous newly formed bile ducts." Thus, the findings of Higginson et al. in their 1957 studies, *seem* to contradict those of their 1953 report and, moreover, are apparently not in conformity with the reports of other workers in the Union, all of whom seem to agree that portal cirrhosis associated with severe siderosis is the most common variety of cirrhosis encountered among Africans in the Union.

5. Of the 200 adult male Africans with liver disease studied by us in Durban about 70% consumed diets comprised almost entirely of maize meal products. One of us (N. McE. L.) found that 97% of 192 patients admitted to this hospital with amœbic liver abscesses earned less than £15 per month. In the same series he found that 60% of 197 patients consumed a diet comprising maize products to the exclusion of almost all first-class proteins, and there were only 4 cases (2%) in which maize was not the staple. These findings support Elsdon-Dew's impression [16] that in the ætiology of intestinal amœbiasis in Durban, ". . . the economic dietary status of the patients may be much more important than either the nationality or the pathogenicity of the organisms . . ."

Navid [17] estimated the "poverty datum line plus standard rent" on a random sample of the population in Alexandra Township near Johannesburg, and found over half were living below this level. She also found that "generally speaking, incomes are not adequate to supply simple, well-balanced meals . . . the bulk of calory intake is furnished by mealie meal . . ."

We cannot fail to consider such an economic state, and therefore such diets, as productive of malnutrition. This opinion is certainly supported by the almost overwhelming incidence of kwashiorkor in infants and the frequency of frank pellagra in adult Africans admitted to this hospital.

6. Gillman and Gillman [9] found that both siderosis and cirrhosis appeared ten years earlier in frank pellagrins than in non-pellagrous Africans dying acute traumatic deaths. Reversal of albumin/globulin ratios is commonplace in Africans in this hospital. Wainwright [18] also regarded the consumption of a predominantly maize diet as contributing in some way to siderosis among these people.

All the above information lead us to regard malnutrition as an important factor contributing to various types of liver diseases in the African—including amœbic liver abscesses. Yet we must perforce agree with Dr. Higginson that no unequivocal proof has yet been provided that malnutrition is the sole cause of the frequent severe liver disease among the Union Africans. Nor, to our knowledge, has anyone who has worked among backward malnourished peoples stated that the liver diseases so prevalent among them are due to any so-called "specific dietary deficiency" comparable with that producible experimentally in animals. On the contrary, most workers (e.g., Waters and Waterlow [18] and Dimmette [19]) consider the long-continued consumption of an inferior and monotonous diet only as an important factor *predisposing* the liver, if damaged, towards the development of cirrhosis and they go to considerable pains to make it clear, as did Gillman and Gillman,[9] that

> "the fact still remains that not every malnourished subject develops hepatic fibrosis even though subsisting on a monotonously inferior diet for many years. Quite clearly malnutrition is not the *only* factor which determines fibrosis although it greatly predisposes to this type of liver reaction."

All workers in South Africa seem to have agreed that the massive iron deposits in the livers of Africans are undoubtedly derived from their diets, and certainly not from hæmolysis or transfusions—whether or not anyone has yet proved that the mechanism of iron absorption is abnormal in nutritional siderosis among Africans.

Further, we find it strange (although we appreciate that *theories* can be propounded to account for it) that acute infectious or "epidemic" hepatitis is uncommonly seen clinically among Union Africans, especially if post-necrotic scarring is indeed as frequent among these people as Higginson and his associates have recently claimed. To prove that post-necrotic scarring is the commonest form of cirrhosis in the Union African it would at least be necessary to demonstrate conclusively that some toxin, or virus perhaps, is causing a non-icteric form of acute hepatitis or low-grade chronic focal necrosis—a matter recently discussed at a conference in Johannesburg.[20] It might also be desirable, if not essential, to establish sound criteria for diagnosing what Higginson et al. have referred to as "post-necrotic" as opposed to "fine portal," "severe coarse," and "true septal cirrhosis." The time is probably overdue for clarifying these criteria, not only for the Union, but also for the many other backward people among whom cirrhosis (and, incidentally, malnutrition and unsanitary living) is rife. The procedure for dealing with such a problem recently adopted in the United States [21] may now profitably be applied for Africa, India, China, and other countries.

Finally, Sir, the massive siderosis in Africans in the Union and its apparent rarity among the natives in more northerly parts of Africa [22 23] is a challenge to all workers in Africa to provide an explanation. We hope that the suffering of millions in Africa and elsewhere may yet be made to yield its quota of useful knowledge to medicine in general.

Schlesinger Organisation Medical Research Unit, Department of Physiology, and King Edward VIII Hospital, Faculty of Medicine, University of Natal, Durban, South Africa.

THEODORE GILLMAN
MICHAEL HATHORN
N. McE. LAMONT.

16. Elsdon-Dew, R. *S. Afr. med. J.* 1946, **20**, 580, 620.
17. Navid, H. Personal communication, 1953.
18. Waters, J. H., Waterlow, J. C. Fibrosis of the Liver in West African Children. H.M. Stationery Office, 1954.
19. Dimmette, R. M. *Amer. J. trop. Med. Hyg.* 1956, **5**, 703.
20. The Liver and its Reactions in Africa. S.M.C. Conference, Johannesburg, 1957.
21. Josiah Macy, jun., Foundation Conferences on Liver Injury. Transactions of 6th Conference, 1947.
22. Davies, J. N. P. *Ann. N.Y. Acad. Sci.* 1954, **57**, 714.
23. Berman, C. Primary Carcinoma of the Liver. London, 1951.

TREATMENT OF HIRSCHSPRUNG'S DISEASE BY SWENSON'S OPERATION

SIR,—In your issue of May 18 Mr. Cooling advocates the so-called State procedure as the treatment for Hirschsprung's disease. This is virtually a left hemicolectomy regardless of innervation, but it always leaves the one portion of the bowel that is constantly malformed. As this is a rectal operation and Mr. Cooling writes from a rectal hospital, his views have added weight.

Swenson's operation for Hirschsprung's disease is one of the best pieces of truly original work in rectal surgery in the past decade. To revert to "State's operation" would be to revert to one of the many unsuccessful treatments practised before this valuable work was done. In fact some of the very first patients to benefit from the new operation were patients who had had hemicolectomies in the Boston Children's Hospital; and at the Hospital for Sick Children, Great Ormond Street, some hemicolectomies have also had to be "revised."

Mr. Wyllie's articles were models of what a careful and critical survey can produce and were based on a large series. Mr. Cooling's statements were apparently casual generalisations and involved small series. It is somewhat ironic that a succeeding issue of *The Lancet* (May 25, p. 1073) should contain a report of Swenson's remarks at the meeting of the American Surgical Association, where he described his experience of 200 treated cases. He cited 8 patients who had married and have become fathers. A further 6 unmarried patients over twenty have had the full treatment, but none report defect in ejaculation. These facts should lay the "Kinsey" side of the argument.

The operative technique is different from that of carcinoma of the rectum, and Swenson's many descrip-

tions of the operation make this clear. In carcinoma, wide excision is the rule: in congenital megacolon, dissection is meticulously close to the rectum.

7 patients who have had segmental left colon resections have come to Swenson for further treatment. The second resection was always difficult because of the shortness of the proximal colon. Indeed, it is usually impossible to bring viable transverse colon down and out through the anus. The cæcum has to be twisted round and the ascending colon pulled through. If Mr. Cooling had to attempt any of these secondary operations I doubt if he would advocate them so freely. Incidentally, the pelvic nerves are in real danger in the secondary operation because of the difficulty of establishing planes after the first operation.

There have been three series of over 100 cases of the Swenson operation reported. (Wyllie, Swenson,[1] and Hiatt.[2]) Let us have a critical review of the hemicolectomies, such as there are of them.

Our Lady's Hospital for Sick Children, Crumlin, Dublin. BARRY O'DONNELL.

THE ARCHITECTURAL FUNCTION OF THE PULMONARY CAPILLARIES

SIR,—Referring to the fascinating article by Dr. Bonham Carter in your issue of June 22 may I draw your attention to the following. The theory of a specific function of pulmonary capillaries in the intranatal expansion as well as in the permanent alveolo-capillary functions of the lungs was proposed by me a quarter of a century ago. With Dr. J. A. Miller[3] we designated this as the "intrinsic function of the lungs."

On p. 1648 of that article we wrote:

"Establishment at birth of two functional mechanisms acting in intrinsic lung function brings about the opening of the lung's air spaces and the creation of the breathing surface. The motor forces behind these two mechanisms are: (*a*) centrifugal thoracic traction . . . and (*b*) *centripetal erection of the pulmonary capillaries* as maintained by the pumping action of the heart."

On p. 1647 the following statement appears:

"We conceive that the intrinsic unit function in the lungs is served by a double motor mechanism the forces of which are acting in opposite directions, namely, the *erectile force* of the functional circulation which acts in a centripetal direction towards the lumen of the airspaces, and, on the other hand, the airspace expanding force which acts in a centrifugal direction from the center of the airspaces."

We applied our concept of intrinsic function not only to establishment of respiration at birth but also to permanent lung function which we defined as breathing surface creation by the activity of the alveolo-capillary structures of the lungs.

In 1954, I reviewed[4] recent developments in pulmonary physiology in reference to our concept which I then redesignated "visceral function of the lungs." Space does not permit me here to quote from this article at greater length. Suffice it to point out that I reviewed some of the more recent evidence in favour of our concept, including those which came from recent observations on congenital cardiac conditions. It is obvious from the review of Dr. Bonham Carter that his superior command of the facts now known from observations in congenital cardiacs has enabled him to build up a far stronger case for the special function of the pulmonary capillaries. However it seems to me that Dr. Bonham Carter has overlooked one very important aspect—namely, that the ultimate purpose of capillary function in the lungs is "surface creation" for diffusion of the gases and as such it is a part of the specific "visceral function of the lungs."

It also seems odd to me that Dr. Bonham Carter has chosen to describe the specific activity of pulmonary capillaries as "architectural function" because English physiologists have contributed so much towards the modern concept of "visceral circulations" and their vital rôle in the specific functions of the viscera with which the functions of the lungs may be compared.[5] Indeed, this article of Dr. Bonham Carter must be considered a contribution to the same concept. In my view his excellent discussion of the most recent aspects of the subject has helped to establish the visceral function of the lungs as a physiological fact. Henceforth its pathological implications must be considered in all forms of pulmonary affections.

In his discussion Dr. Bonham Carter noted with remarkable foresight that if this hypothesis of a specific function of the pulmonary capillaries is accepted, other concepts may follow in the explanation of changes in the elasticity of the lungs. In fact I have applied the concept of visceral lung function in the explanation of pulmonary emphysema. I made reference to this fact in a recent article[6] which was referred to in your editorial columns.[7]

My purpose in making these comments is not merely to claim priority for the theory of a specific vital function of the pulmonary capillaries but even more to draw attention to my concept of "visceral function of the lungs" which has been waiting for a quarter of a century to be confirmed by research of the type described by Dr. Bonham Carter.

New York. ISRAEL RAPPAPORT.

CLINICAL THERMOMETERS

SIR,—In response to correspondence in your columns and as long-established manufacturers of clinical thermometers, may we try to explain the facts without too many technicalities.

It has been customary for the last 80 years or more to divide clinical thermometers into three categories—namely, $^1/_2$ minute, 1 minute, and 2 minute. This depends entirely upon the size of the registering bulb and the volume of mercury contained therein, which in turn depends on the size or capacity of the very fine capillary bore which runs through the glass tubing. This capillary bore is produced by drawing down a large billet of molten glass, with the white enamel strip, internal bore, and triangular section already fabricated. The resultant size of the internal bore, and for that matter the outside diameter as well, varies in size on each length drawn out with the result that the size of registering bulb has to be adjusted very accurately in relation to the size of bore, so as to provide ultimately a graduated scale of 15°F—i.e., 95–110°F—over a distance of approximately 2 inches.

It has been the custom for each manufacturer to decide what sizes of bulb will, under favourable circumstances, give a response in $^1/_2$ minute, 1 minute, or 2 minutes as the case may be. The great problem, however, concerns the fact that no two human beings appear to respond at an exactly similar rate. This is accounted for, no doubt, by the differences in vitality, blood circulation, and age, and whether the thermometer bulb has good conductivity under the tongue (for oral temperatures), whether the mouth is kept closed, the presence of dentures, and a number of other factors.

It is therefore impossible for clinical-thermometer manufacturers to compensate for all these varying circumstances and they can only provide thermometers which will, under the most favourable conditions, register in $^1/_2$ minute or 1 minute, as needs be.

The position is further aggravated by popular demand insisting, more often than not, on a $^1/_2$-minute thermometer, and manufacturers have no alternative but to comply with the demand as it exists, to the best of their ability.

Fortunately, a thermometer will register more rapidly in a feverish person than in an individual with a subnormal temperature.

It has been a generally accepted practice to leave the thermometer in the mouth for double the time marked on the

1. Swenson, O. *Advanc. in Pædiat.* 1955, **7**, 325.
2. Hiatt, R. B. *Ann. Surg.* 1951, **133**, 321.
3. *Ann. intern. Med.* 1938, **11**, 1644.
4. *Dis. Chest*, 1954, **25**, 1.
5. Visceral Circulation. Ciba Foundation Symposium.
6. *J. Amer. med. Ass.* 1955, **158**, 1436.
7. *Lancet*, 1955, ii, 860.

instrument as a safeguard against the possible variations in the physical condition of the patient, and this habit is to be recommended.

The shortcomings of the system of marking the time of registration on clinical thermometers have been recognised by the medical profession and the manufacturers for a long time, with the result that in 1953 an effort was made to overcome some of the objections by the production of a British Standard clinical thermometer no. BS.691 in which the markings of $^1/_2$ minute, 1 minute, and 2 minute have been replaced by the descriptions *quick*, *medium*, *stubby*, together with certain other restrictions designed to provide a satisfactory standard of accuracy and operation for general use.

The quick and medium types refer to the long cylindrical shape of registering bulb, while the stubby pattern refers to a short squat bulb which is not so sensitive in registration as the long thin shape. The British Standard specification 691/1953 explains the new time designation in the foreword and a printed statement of explanation is provided with each thermometer.

British Standard clinical thermometers are available at chemists, but their existence is not yet as generally known as it might be, outside professional circles.

CLINICAL-THERMOMETER MANUFACTURER.

SIR,—I wonder whether your readers are familiar with an experiment reported in 1955.[1] Using a very quick-acting and accurate thermometer (a copper-constantan thermocouple giving a steady reading accurate to 0·1°F within *fifteen seconds* of contact with the tissues), it was found that after two healthy adult males had been allowed to speak for half to one minute it took *ten minutes* to record their temperature. It was claimed that this showed that the time lag in temperature measurement depended more on slow tissue warming than on the properties of the thermometer.

RETAILER OF CLINICAL THERMOMETERS.

SIR,—The use of clinical thermometers was investigated by the United States Food and Drug Administration, Department of Health, Education and Welfare, and their conclusions, published [2] in 1944, were:

(1) The character of the rise of the mercury column in an oral thermometer under clinical conditions is different from that under laboratory conditions.

(2) In this study, thermometers marked with specific time designations "1 minute," "$^1/_2$ minute," and "60 seconds" were found to require about the same length of time for the instrument to reach equilibrium as thermometers with no time designations.

(3) Three minutes should be the minimum time interval allotted for an oral thermometer to reach equilibrium under ordinary conditions of use.

Additional information can be obtained by communicating directly with the Food and Drug Administration at Washington 25, D.C., U.S.A.

Chicago, Illinois. NORMAN DE NOSAQUO.

PACKING OF DRESSINGS

SIR,—I have been retired some years. Recently I had an injury necessitating dressings, and to my surprise these dressings were packed as they had been over forty years ago.

A layman takes this packet, opens one end, and releases the over-tight cover, using several fingers or an unsterile thumb-nail. One used to tell patients to put the dressings in a clean towel. Do they? Too often they go back into the inadequate wrappings and lie about collecting dust and germs until wanted again.

Many things are put up in 'Cellophane'-like packages these days. Why not put these dressings into such a bag with a tuck in it, so that they can be opened out easily? In this way dressings sterilised before packing can be handled or kept with a chance of cleanliness, and retain to the utmost their original sterility. An exception might be made in hospitals, where the dressings are more carefully handled.

The old way retained for hospitals would ease any change-over period.

Newtown, Isle of Wight. JOHN HASTIE JONES.

1. Beswick, F. B., Cole, P. *Brit. med. J.* 1955, ii, 378.
2. *J. Lab. clin. Med.* 1944, **29**, 179.

ILEOSTOMY CHEMISTRY

SIR,—Mr. Crawford and Mr. Brooke, in their article of April 27, re-emphasise that very large losses of water, nitrogen, sodium, and to a lesser extent potassium may result from the diarrhœa associated with ulcerative colitis and familial polyposis. They noted the change in the chemical composition of the excreta immediately following a total colectomy and ileostomy and also subsequently after the new stoma has been established for several weeks.

The importance of determining the chemical composition and volume of fluid lost per rectum in patients with diarrhœa, or postoperatively from the ileostomy as advocated by Crawford and Brooke, cannot be too strongly emphasised. As was pointed out by McIver and Gamble [1] in 1928, the serum- or plasma-electrolyte concentrations may often not mirror the gains or deficits of these substances in the body. They stated that "hepatic duct bile and fluid derived from the intestinal mucosa contain approximately the same amount of fixed base and chloride ion as does plasma." "Loss of this fluid will cause a reduction in the volume of the blood plasma and interstitial fluid but should not alter the plasma chloride (or bicarbonate) concentrations." Thus, the simplest and most efficient way of maintaining fluid and electrolyte balance is by measuring the volume of the various fluids lost from the body or those shifted internally and multiplying this by an average or determined electrolyte concentrations of the fluid lost, and thus calculating the amount and composition of the replacement fluid needed. Crawford and Brooke emphasised that prior to an ileostomy, or during the first seven to ten days after the formation of an ileal stoma, water and sodium constitute the major losses from the gastrointestinal tract.

The points to be questioned are their statements that (1) the sodium concentration of ileal excreta ranges between 200 and 400 m.eq. per litre and that "for a rule-of-thumb calculation of requirements of sodium, it is only necessary to know the daily volume of ileostomy output (a simple ward procedure) and to assume that 300 m.eq. of salt has been lost with each litre of fluid"; (2) there is "no clear evidence of urinary conservation of sodium"; and (3) that since the loss of potassium from the ileostomy is reduced in contrast to the preoperative period of rectal diarrhœa, deficits of this ion are primarily a preoperative problem.

Sodium concentrations per litre of ileostomy drainage reported by Crawford and Brooke are in contrast to the findings of Lockwood and Randall,[2] who reported that the sodium concentration of the excreta obtained from a recent ileostomy ranged between 105 and 143 m.eq., with an average value of 129 m.eq. per litre. In one case after the ileostomy had become adapted Lockwood and Randall found a concentration of 46 m.eq. of sodium per litre. Thus, the concentration of sodium in the ileal fluid on the first seven to ten days following an ileostomy as reported by Crawford and Brooke is three times as great as the values reported by the other workers [3] and considerably greater than that found in any other body-fluids. The sodium concentrations reported by Lockwood and Randall are comparable to the values noted [3 4] in the fluid aspirated from the terminal ileum of patients with paralytic ileus or mechanical obstruction of the small intestine. Obviously the discrepancy in the sodium concentrations of ileal fluid that were reported by Crawford and Brooke and by Lockwood and Randall would make it unwise to employ an estimated value of 300 m.eq. per litre as a "rule-of-thumb calculation" until these differences could be resolved. By measuring the daily volume of ileostomy drainage and periodically determining its sodium concentration the losses via the ileostomy of these patients can be determined.

1. McIver, M. A., Gamble, J. L. *J. Amer. med. Ass.* 1928, **91**, 1589.
2. Lockwood, J., Randall, H. T. *Bull. N.Y. Acad. Med.* 1949, **25**, 228.
3. Krieger, H., Abbott, W. E., Levey, S., Babb, I. L., Holden, W. D. *Surgery*, 1954, **36**, 580.
4. Abbott, W. E., Levey, S., Savoie, E., Davis, J. H., Babb, I. L., Krieger, H. *Arch. Surg.* 1954, **69**, 334.

Other studies have shown that where there were large extrarenal sodium losses, urinary conservation of this ion occurred if the extrarenal losses exceed the intake. Therefore, it seems unlikely that it would not occur in Crawford and Brooke's patients, since they report such large losses of sodium in the ileostomy fluid.

The third point in question pertains to the fact that they infer that the potassium needs may be approximated by knowing the extrarenal losses of this ion. This is in contrast to the accepted concepts, since the major loss of potassium is in most instances renal in origin. Thus, in spite of the fact that the extrarenal loss of potassium decreases following an ileostomy sizeable renal potassium losses may occur which might lead to serious consequences unless this ion is given in adequate amounts. It has been our experience that these patients may develop hypokalæmia in conjunction with total body deficits of potassium and that the administration of this ion is often quite beneficial in restoring normal peristaltic activity in such patients.

It is quite obvious that patients who undergo a total colectomy and ileostomy are often critically ill and need very careful management. Thus, the article by Mr. Crawford and Mr. Brooke is extremely important in emphasising these alterations, and the further elucidation of some of the points in question would be of considerable importance in the management of such patients.

WILLIAM E. ABBOTT
STANLEY LEVEY
Cleveland, Ohio. HARVEY KRIEGER.

EUSTACHIAN SELF-INSTILLATION

SIR,—About eight years ago, I wondered whether otitis media without perforation could be treated by the patient himself through the nose, in such a way as to allow drugs to reach, not only the mucous membrane, but also the eustachian tube and middle ear. At first I was chiefly interested in non-suppurative disease, and my main aim was to avoid tubal catheterisation. I could find no published reports of eustachian medication self-administered through the nose.

Since my first report on tubal self-instillation,[1] I have changed the method. It is harder to describe than to perform.

The patient lies supine, with his head rotated 45° toward the affected ear. A non-traumatic nose-dropper, charged with about 1 ml. of medicated drops, is introduced into the nostril on the affected side. Before introducing the drops, the patient forcibly opens his mouth, as in yawning. The yawn is prolonged during instillation and for a few seconds afterwards. The fluid thus descends by gravity only, finally entering the pharyngeal orifice of the eustachian tube, which remains patent during yawning.[2]

It is important to introduce the drops slowly and so allow smooth gravity flow without flooding. Only slow introduction can overcome the difficulty of filling a tube of this calibre and course. For this reason I never attempt to instil more than ½–1 ml. even though the eustachian tube and middle ear hold more than this.

After instillation the patient slowly closes his mouth and rotates his head to the full lateral position with the affected side downwards. He then lies still in this position for 10–20 min. When the technique is properly carried out, no fluid is felt in the pharynx. When sympathomimetic drugs are used, the patient sometimes complains of temporal headache occasionally radiating to the eye, perhaps because the drug is more readily absorbed when given this way than when it is administered as the usual nasal instillation. Certainly by this method, the drops remain in contact with the mucous membrane for a much longer time. For this reason I reduce the strength of the drops by half.

Striking results have followed eustachian instillation alone in severe otalgic crises of acute catarrhal otitis. In such cases, 3–5 drops of silver proteinate with ephedrine, introduced by my technique, give instantaneous relief. Purulent otitis media can be aborted, in the initial congestive phase, by combining the general antibiotic treatment with the topical per-eustachian action of an antibiotic and a sympathomimetic drug. Silver proteinate and cortisone are sometimes used in acute purulent otitis media, and, in combination with general antibiotic treatment, they shortened the course of the illness. When pus is present, I suggest adding trypsin. Subacute catarrhal otitis responds fairly well to eustachian medication with cortisone and decongesting drugs. In the single chronic case so far treated, functional results are still satisfactory three months after the last application of streptokinase and streptodornase.

I think that this technique is useful both in reducing the duration of acute infections and in sparing the patient tubal catheterisation in chronic cases. I hope to publish soon a more detailed report with a follow-up account and audiometric control. Meanwhile, since the technique is very easy, I hope others will try it.

Pisa, Italy. C. NIOSI.

1. Niosi, C. *Boll. Soc. Med.-Chir. Pisa*, 1955, **23**, 435.
2. Laskiewicz, A. *Rev. Laryng.* 1953, **74**, 309.

IMPORTATION OF POLIOMYELITIS VACCINE

SIR,—The refusal of the Minister of Health to allow import licences for poliomyelitis vaccine from America has aroused widespread concern both in the medical profession and in the general public. In view of this concern I think that many doctors would be glad to know that it is possible to obtain from the Secretary of the Ministry of Health, Savile Row, London, W.1, permission to import the vaccine from the U.S.A. and Canada for individual families.

Over a month ago when applying for such permission for a Canadian doctor, we inquired specifically from the Ministry regarding the regulations controlling import on personal application. I wrote:

"We are of course constantly being asked by a variety of persons—British, Commonwealth, and foreign citizens—how they can import polio vaccine. I should be grateful if you would let me have the necessary information for dealing with these questions—i.e., what are the necessary qualifications enabling one to obtain an import licence? Does the information obtained from Canada House apply to all Commonwealth subjects? Does it apply to all foreign nationals too? Does it apply to British nationals who are willing to pay for the vaccine or is the deciding factor that the applicant has access to dollars?"

I received the following reply:

"The importation of any vaccine into this country is normally prohibited except by the holder of an import licence under the Therapeutic Substances Act, 1956. The Minister is, however, in certain circumstances, prepared to authorise H.M. Customs and Excise to release small consignments of controlled substances when addressed to individuals and where a registered medical practitioner is associated with the importation since a licence could not be issued in such cases.

In the case of poliomyelitis vaccine, the Minister is normally prepared to give such authority where a consignment is required for the use of one family and where such a practitioner has agreed to carry out the vaccination.

If the importer supplies details of the consignment, together with the name and address of the doctor concerned, it is possible for the Department to contact the Customs Officer concerned in advance to avoid delay. We understand that where a consignment of poliomyelitis vaccine is sent by air freight, the manufacturers send it packed in a vacuum flask and, if there is any delay before the vaccine is collected, the air line concerned is often able to arrange refrigeration.

I should, however, point out that such vaccine, not having been manufactured in the country, or imported, under licence from the Ministry, does not necessarily comply with the regulations under the above-mentioned Act, which control the purity, potency, and safety of this particular prophylactic.

Consideration will be given to any requests for authority to import small quantities of poliomyelitis vaccine accompanied by the information referred to above but I cannot guarantee that this authority would be given in any particular case."

Nuffield Orthopædic Centre, Oxford. MARGARET AGERHOLM.

CÆSAREAN SECTION

Miss AUDREY WOOD, general secretary of the Royal College of Midwives, referring to the letters by Dr. Salzmann (May 25) and Mr. Corbett (June 22), writes :

" Our attention has been drawn to references to a statement made ' by a prominent member of the Royal College of Midwives ' on the cæsarean-section rate in maternity hospitals or units. This statement has not the official authority of the College and should therefore be regarded as the personal opinion of the member concerned."

The Editor of the *Medical Directory* writes : " The accuracy of the directory depends on the return of the annual schedule, which has recently been posted to all members of the medical profession. Should the schedule have been mislaid I will gladly forward a duplicate upon request. The full name and year of qualification of the doctor should be sent for identification." The directory is published by Messrs. J. & A. Churchill, Ltd., 104, Gloucester Place, London, W.1.

Public Health

Poliomyelitis

UNCORRECTED poliomyelitis notifications for the week ending July 6 (27th week of the year) were as follows (preceding week in parentheses) : paralytic 68 (73), non-paralytic 65 (46) ; total 133 (119). The following figures compare this year, up to and including the 27th week, with the preceding nine years.

Year	*Total cases up to and including 27th week*	*Cases in 27th week*
1948	706	25
1949	631	77
1950	1447	212
1951	907	100
1952	895	86
1953	1200	183
1954	738	65
1955	675	99
1956	947	114
1957	1524	133

Influenza

Information received by the World Health Organisation up to July 11 indicated no further extension on influenza epidemics in Asia. In Europe the Asian virus has gained footholds in several parts of the Netherlands. Although a high proportion of girls in two boarding schools are affected, and there are a certain number of scattered foci of infection in several towns, the disease is not spreading rapidly. The Netherlands public-health authorities indicate that only some scattered mild cases are noted, as is often the case in summer. The general health of the population in the Netherlands is not in the least disturbed and life there continues normally.

In the United States a virus resembling the Asian strain has been isolated from members of the crew of naval vessels in San Diego and Norfolk, Virginia. A strain of virus from a case in Cleveland, Ohio, has been identified as the Asian type. In Asia, the epidemics are dying down in Burma, Japan, Laos, New Guinea, North Borneo, and Sarawak. In Saudi Arabia, 5% of Mecca pilgrims are estimated to have caught influenza, but the incidence is decreasing. In Iran, influenza is reported in army barracks in Teheran and Khusistan. The infection is also reported throughout Korea. Generally speaking, the disease continues to be mild with few complications or deaths.

Colouring Matter in Food

The Minister of Agriculture, Fisheries and Food and the Minister of Health, acting jointly under powers conferred by the Food and Drugs Act, 1955, have made the Colouring Matter in Food Regulations, 1957. The regulations are based on recommendations made by the Food Standards Committee, and they replace the colour provisions of the Public Health (Preservatives, &c., in Food) Regulations, 1925–1953.

Hitherto it has been permissible to use in food any colours except the small number specified in the regulations. Under the new regulations no colour may be used unless it is included in the prescribed list of permitted colours. There is a ban on the use of colouring matter, otherwise than for marking purposes, in or upon meat, game, poultry, fish, fruit, or vegetable in a raw and unprocessed state ; but an exception is made for citrus fruit which may have permitted colour provided the skin of the fruit is marked conspicuously with the words " colour added." Colouring matter and colouring and flavouring compounds are required to be labelled in a prescribed form.

The regulations will come into effect by stages, beginning immediately, and they will be fully operative by June, 1959. They apply to England and Wales only, but corresponding regulations for Scotland will shortly be made by the Secretary of State.

Obituary

ANDREW JOHN MORLAND

M.D. Lond., F.R.C.P.

Dr. Andrew Morland, physician in charge of the chest department of University College Hospital, London, died on July 13 at the age of 61.

He came of a Quaker family and his father, John Coleby Morland, sent him to Sidcot School. While still a boy there he developed tuberculosis and was sent to Switzerland where he regained his health, continued his education, and became a superb skier. He spent some time at Arosa where his cousin, Dr. Egbert Morland, with as yet no thought of his later work as editor of this journal, was practising as a chest physician.

During the 1914–18 war Andrew Morland served with the Friends Ambulance Unit in France, but his health did not prove equal to this test and he was invalided out. Having had a short, unsuccessful spell in the family business at Glastonbury, his thoughts turned to medicine and he entered University College Hospital. Qualifying in 1923, he held a house-appointment at the Brompton Hospital and then returned to Switzerland as medical superintendent of the Palace Sanatorium at Montana, where he remained until his appointment in 1928, to the staff of Mundesley Sanatorium in Norfolk. He stayed at Mundesley till 1935, and then came to London to set up in consultant practice. Soon afterwards he joined the staff of the French Hospital and in 1937 he was appointed to University College Hospital. In 1941 he was elected F.R.C.P., and in 1950 he was appointed chevalier of the Legion of Honour.

R. H. D. writes :

To have known Andrew Morland since his youth is to be left with an abiding impression of worth and stability. I can remember him perhaps most characteristically as a skiing companion from the early 1920s and down through the decades almost to the last year of his life ; and to me he skied superlatively well. He seemed to know all about equipment and technique, about snow conditions and the weather and terrain ; and in a quiet unassuming way, appearing never to hurry or strain and very seldom to fall, he covered the ground with a certainty that amounted to genius. Only very few, the first-class skiers with great ambition, could get down before him. And so he skied for England against the Swiss, had his gold K. and his first-class test, and was a first-class judge. But all the same he liked best touring and soft snow, and when hard piste-running came in he continued to give the impression of ability and poise and his intelligent eye detected gullies and patches of powder snow down which he executed skilful old-fashioned turns.

He was a well-integrated man, and his skiing was very much like all other aspects of his life. He had immense stocks of knowledge, a massive ability and memory for detail as well as a Quaker-like self-confidence and certainty in his own rightness. But he was never pompous, nor patronising, and he was kind, tolerant, and very generous. And so with his

professional colleagues his advice and opinions carried great weight and importance whilst to his patients he seemed omniscient and a father figure who shouldered their troubles and in whom they had unlimited faith.

He rose to the top of his profession, but perhaps he was not ambitious and cared first for his family, his creature comforts, and his friends, for it was around these that he built his life. As a personal friend he was a relaxed and easy person, with whom it was a delight to do things because he assumed that one could, like himself, do anything one set out to try. And so one's exploits with him were always more extensive and better arranged than they otherwise would have been. He delighted to outwit his friends and he had an ironical sense of humour as well as a slight streak of meanness, all of which came out playing, and usually winning, a slicing, cutting, lobbing, and utterly infuriating game of tennis and made him formidable at bridge and an unbeatable croquet player. He liked to have, and to share, good food and drink; and he had a genius for making himself physically comfortable. No-one drank a cup of tea lying horizontally on his back with such skill and contentment. But illness and confinement suited him not at all, and though, characteristically and with great courage, he filled his last few months with plans for the future, his quiet, rapid death released him from a tedium out of which it was difficult for even his best friends to help him.

Dr. Morland is survived by his widow, a son, and a daughter.

A memorial service is to be held at 12.30 P.M. on Monday, July 22, at the small meeting house, Friends' House, Euston Road, London, N.W.1.

LOUIS FRANCIS ROEBUCK KNUTHSEN

K.C.V.O., O.B.E., M.D. Edin.

Sir Louis Knuthsen, who died at his home in London on July 7 at the age of 86, was for many years physician-in-ordinary to the Princess Royal.

He was born at Santa Cruz in the West Indies, the son of Francis Knuthsen. He was sent to Scotland for his education, and from Edinburgh Academy he went to Edinburgh University, graduating M.B. in 1893. The ten years after graduation he spent in general practice in Cornwall and in Shropshire, interspersed with post-graduate study in Paris, Berlin, and Vienna. In 1901 he took his M.D. with honours. Two years later he came to London and he held clinical assistantships at the Hospital for Diseases of the Throat, Golden Square, and at the Hospital for Sick Children, Great Ormond Street. While he was in practice in Cornwall he had become interested in first-aid, and in London he continued this work as a lecturer and examiner for the London County Council. He also became more and more attracted to dermatology, and after holding clinical assistantships at St. John's Hospital for Diseases of the Skin he was appointed to the staff in 1908. In 1915 he was also appointed physician to the London Skin Hospital.

During the 1914–18 war he served as officer-in-charge of the British Red Cross Hospital at Wimereux. He was twice mentioned in despatches and was appointed O.B.E. in 1919. He also received the Médaille des Epidémies en vermeil and the Médaille de Reconnaissance avec bouton. In 1934 he was appointed C.V.O., and the following year he became physician-in-ordinary to the Princess Royal; he held this appointment till 1951, when he became extra physician. In 1936 he had been promoted K.C.V.O. He was also a Knight of Grace of the Order of St. John of Jerusalem. He was vice-president of the British Hospitals Association and deputy warden of the King's Chapel of the Savoy.

W. S. C. C. writes:

Sir Louis Knuthsen, known to all his friends as "K," was perhaps the best-educated medical man I have known. He had travelled extensively and intelligently in his younger days, and had important friends in every country in Europe. His opinion on almost any subject or event was informed "from the inside," and was invariably delivered in entertaining fashion. His evident kindness always inspired active affection both in his patients and his friends. As he grew older his ripe wisdom became increasingly apparent and was widely valued. After the death of his wife in 1946 he seemed lonely, and his chief pleasure was in the society of his friends, young and old. In summer his tall handsome figure, dressed in the height of Edwardian fashion, could be seen most afternoons strolling up towards "Lord's."

Notes and News

THE MIDDLE CLASS IN INDIA

MUCH is known about the diets of Indian peasants in relation to their health and state of nutrition: indeed, well over a hundred dietary and nutritional surveys have been undertaken in villages in recent years. By contrast little is known about the Indian middle class, and it is therefore instructive to have the results of a survey,[1] by the physiological department of Baroda University, covering members of the teaching profession in Baroda (256 men and 52 women) and their families.

Incomes ranged from rupees 100 to 450 per month. Families were divided into five economic groups and the different classes of foodstuffs were consumed in the following amounts:

	Group I	II	III	IV	V
Family income (rupees per head per month)	up to 25	26–50	51–75	76–100	over 100
Cereals	11·7	9·7	11·2	10·0	7·4
Pulses	3·0	2·2	2·6	1·2	3·6
Fruit and vegetables	7·6	7·2	8·9	8·5	11·3
Oils and fat	1·6	1·9	2·3	2·6	2·8
Milk	5·3	8·6	8·3	8·9	13·6

All these figures are in ounces per head per day—perhaps a pity, since the government of India have promised to introduce the metric system, and a physiological department could fittingly take a lead in this attempt to eliminate the chaos in Indian weights and measures.

In the 370 persons examined clinically, stomatitis (11%), pyorrhœa (8%), dental caries (10%), phrynoderma (10%), and anæmia (hæmoglobin below 60%) (16%) were the main findings. The great majority of these were in economic groups I and II. Calorie intake varied from 2130 to 2700 per head per day in the different groups and were considered adequate, though 6% of the persons clinically examined were reported as excessively thin. Proteins provided 9–11% of total calories, and fats provided 38% in the upper-income groups but only 26% in the lower. (The figure of 38% of calories from fat is about the same as the general average in Great Britain, which in 1954 was 36·5%.[2]) Of 64 men between forty and sixty years of age who were examined, 13 had hypertension (diastolic pressure over 96 mm. Hg), but their fat consumption is not stated. With the wide variations in total fat consumption, and also in the proportion of fats from vegetable and animal sources, India offers an opportunity to those investigating the relation between dietary fat and arterial disease.[3]

Of the homes visited, 23% had no electricity, 33% no flush lavatory, and 19% a bad water-supply. In the lower-income groups, 50% of the family income went on food, 9% on fuel, 12% on rent, and 13% on clothes. This leaves little money for recreations, and the authors report that "habits were simple; very few smoked, but many took tea. Regular exercise was taken by very few and practically none had any hobbies." About 30% of the teachers were in debt.

This and other information given in the report shows that life is a hard struggle for school-teachers in India; and, since much of the future of any country depends on the quality of the teachers, we must hope that this account of their circumstances will be widely and sympathetically read. As the vice-chancellor of the University of Baroda says in his foreword, it is the responsibility of municipalities and civic bodies to see that suitable houses and necessary amenities are provided. At the same time, it is important that the teachers themselves should understand the value of better food habits and regular exercise as means of health.

NUTRITION IN AFRICA

LAST year the Commission for Technical Co-operation in Africa South of the Sahara (C.C.T.A.) held its third nutrition conference in Luanda, Angola. The report now published[4] is not a detailed account of the proceedings, but it includes the official speeches, a list of papers submitted, and, in the annexe, the conclusions and recommendations of the previous two confer-

1. Pathak, J. D. K., Bhatt, N. M. Inquiry into the Economic Condition and the State of Health and Nutrition of the Families of the Secondary School Teachers of Baroda. Published by the University of Baroda. 1954. Pp. 73.
2. See *Lancet*, 1956, ii, 457.
3. Gopalan, C., Ramanathan, K. S. *Ibid*, p. 1212.
4. Report of the C.C.T.A. Inter-African Nutrition Conference, 3rd Session, Luanda, 1956. Obtainable from the Publications Officer, Commission for Technical Co-operation in Africa South of the Sahara (C.C.T.A.), 43, Parliament Street, London, S.W.1. 2s. 6d.

ences. The main value of the report, however, probably lies in the conclusions and recommendations of the recent meeting.

The report of the second conference did not appear until 18 months had passed, and it is valuable to have some record of the third conference available so soon. The report gives a clear idea of the many problems awaiting investigation and it also indicates profitable lines of research, as seen by experts with experience in many different parts of Africa. The full account of the proceedings which is to be published will also be very welcome.

A PATIENT'S BOOK

PHYSICAL illnesses do not, as a rule, make good subjects for autobiographies. They are intensely personal experiences; and too often they are dominated by the triangle of the sick author, his healthy self, and his illness, to the exclusion of all more normal human relationships. A few writers (like Karinthy in *Journey Round My Skull*) have succeeded in transforming their ordeal into a nightmarish tale of adventure: and one or two (like Proust) have conveyed their spiritual rather than physical experiences with deep psychological insight or rare lyrical beauty. In an account [1] of his struggle with congenital heart-disease, Mr. Dennis McEldowney does not completely succeed in any of these literary sublimations; but through the cool, almost austere simplicity of his prose, shines a spirit of great fortitude, cheerfulness, and faith. Unselfconscious modesty and a wholly engaging lack of self-pity add lustre to it.

The book is an account of his first twenty-four years as a "blue baby," the events leading up to his operation (one of the first Blalock procedures carried out in New Zealand), and his step-by-step rediscovery of the outside world. It is from this last phase that the book derives its rather grandiose title (quite out of keeping with the quiet tone of the rest); and it is also this part of the narrative in which the common defects of sick-room memoirs become most evident. Exploring the world of the physically fit must have been a thrilling—sometimes terrifying—adventure to the author; but he does not captivate us who are all too familiar with it. The story of the first twenty-four years, on the other hand—the slow, almost imperceptible ebbing away of life, the closing-in of the four walls of the sick-room, the growing isolation, the blurring of outside events—are beautifully told: here, as Mr. Douglas Robb remarks in a foreword, we catch a glimpse of "that great intangible world of hopes, fears, and feelings that encompasses each patient that a doctor has to deal with, and which would be overwhelming if he had the time and insight to give anything like full attention to it." The hospital scenes too are striking. Surgery, even heart surgery, has lost much of its superficial thrill; but hospital wards still bring out the best and most heroic in human nature. These moments of misery and greatness are sketched with a great economy of words but with moving compassion. This is not a great book; but it is a good book in every sense of the word.

University of Cambridge

On July 4 the following degrees were conferred:

M.B., B.Chir.—M. J. Absolon, Akilowun Abednego Akiwumi, C. F. Allenby, P. H. Awdry, Rahul Banerjee, D. W. Barkham, J. H. L. Bland, P. R. Butler, Peter Cannon, J. V. Catto, P. A. F. Chalk, E. S. Chesser, W. J. Cliff, Stephen Clutterbuck, R. B. Cole, C. C. Cory, B. S. Cox, D. A. Crockford, T. R. P. Cullinan, Katherine E. Cuthbert, T. C. Dann, T. J. Davenport, Margaret S. Davies, Sonia Rohini Dias Bandaranaike, P. N. Dixon, D. C. Dumonde, D. R. Dunkerley, J. M. E. Dunn, A. J. Edwards, D. I. K. Evans, A. M. Fisher, Paul Francis, O. G. Franklin, A. W. Galbraith, J. L. Gedye, J. H. Gervis, A. W. Gentles, F. B. Gibberd, W. R. Gibson, R. A. S. Gilchrist, R. B. Goldschmidt, D. B. Grant, K. B. Hallam, A. M. Hall-Smith, M. W. Haslett, P. C. Heal, R. H. Herniman, Anne S. Hill, Kok Kheong Ho, A. E. Holmes, R. C. G. Hughes, J. A. Jacobs, R. J. Jarrett, I. McD. Jessiman, M. C. Johnson, N. W. Karunaratna, Edith G. A. Kerr-Wylie, B. J. King, J. M. Kirk, Jill M. Knight, G. W. Knox, S. F. Kuvin, J. R. Lang, B. A. Latham, B. E. Lee, A. J. Levi, H. J. Lloyd, Harold Ludman, J. S. Lyon, J. C. Mackenzie, M. J. O. Massey, M. B. R. Mathalone, J. A. Mathews, Joan Maurice-Smith, D. H. Morgan, M. N. Morgan, J. A. Morgan-Hughes, P. J. S. Murray, M. A. Newton, J. B. Nichols, D. A. Nightingale, C. H. Nourse, H. F. Oxer, J. W. B. Palmer, D. J. Parry, Malcolm Parsons, Anne W. Peryer, R. A. N. Petrie, C. D. Plows, D. W. Potts, R. J. L. Potts, H. R. M. Roberts, J. E. Robinson, M. J. S. Scorer, J. H. W. Shaw, A. P. Sheldon, I. B. Shine, Mary J. Silver, R. O. S. Sims, W. A. B. Smellie, D. M. Smith, Ivo Smith, P. R. Smith, G. E. Sowton, G. D. Stainsby, J. N. Stenhouse, D. C. R. Stephens, Michael Taggart, C. E. R. Thompson, J. E. Utting, B. Le G. Waldron, J. J. McL. West, Enid Wheldon, June M. Wilby, J. P. Wilson, C. B. S. Wood, J. M. Woodhead, Elma P. Wyatt, J. D. Wyatt, G. L. Zeitlin.

1. The World Regained. By DENNIS MCELDOWNEY. London Chapman & Hall. 1957. Pp. 156. 10*s.* 6*d.*

University of London

At recent examinations the following were successful:

D.T.M. & H.—Muhammed Aslam, P. D. Farjo.

Dip. Bact.—Abdus Salam Akhtar, Elizabeth H. Asheshov, G. I. Barrow, J. M. S. Dixon, D. R. Gamble, Sukumar Ghosh, Shamim Gilani, S. P. Lapage, Ian Macadam, Jaladhi Kumar Sarkar, L. P. Spence.

D.P.H.—W. H. Allen, G. L. Balgobin, Franz Bauhofer, R. L. Bell, D. W. Bookless, J. A. D. Bradfield, T. N. N. Brennan, T. C. L. Brown, Carmel Cachia, A. C. Camm, Salvino Caruana, J. C. Chakrabarti, J. K. Chakravarti, O. W. Christensen, J. P. Crowdy, S. E. Cupples, W. O. Davies, Aileen P. Dring, J. V. Dyer, D. E. Evison, J. M. Ferguson, Chitra Gopalan, Gabriele Gramiccia, M. C. Gupta, P. G. Haigh, J. M. Holden, Chandra Hooja, F. T. Hunt, L. B. Hunt, Brij Lall Kapoor, Mairead M. Lilliott, I. R. Lindsay, H. R. Mallows, Arthur Manoharan, Winifred M. Markham, K. D. Mason, Florence L. O'Rourke, W. A. Paddon, R. H. Peries, Rajaratnam Prince Rajakone, D. W. Rankin, Deb Kumar Ray Chaudhuri, W. T. Richardson, Louise M. C. Rienks, Edward Robinson, Charles Runciman, R. N. L. Sansonnens, K. S. Seal, Wilfred Sinclair, P. K. Sylvester, Sara Syrop, D. G. Trott.

University of Durham

On July 5 and 6 the following degrees and diplomas were conferred:

M.D.—* J. A. Carr, * L. M. Franks, * John Gilroy, * K. S. Henley, Stanley Ludkin, E. W. Walton, A. E. Wright, * F. W. G. Wolff.

M.B., B.S.—Shamsi Atanda Adegbite, Samuel Ntow Afoakwa, P. W. R. M. Alberti, Rosemary A. Archer, G. A. Ashford, J. B. Ball, Olumide Adebayo Banjo, D. D. Barwick, * M. S. Benett, A. I. Blenkinsop, * Philip Braunstein, A. H. Brown, Gordon Chalmers, W. J. B. Cherry, Dorothy A. Christie, Gloria Cohen, Alan Denham, Maureen M. Denham, J. D. Eden, J. B. Emslie, P. J. Enoch, * G. L. Featherstone, G. H. Greatrex, G. A. Grebneff, John Hardy, Robert Hart, * D. C. G. Henderson, V. B. Hicks, K. N. Howson, P. S. Hunter, R. M. Jameson, J. E. Johnson, Sheila M. Johnson, L. I. Jones, J. M. Kendall, J. I. King, John Kirkbride, Okormansa Kwamina-Amoah, P. P. Lakra, J. A. Lennox, E. F. M. Luke, Fiona M. McCallum, L. F. W. McMahon, A. F. J. Moreton, S. MacDonald Murray, R. E. D. Nelson, J. M. Parkin, B. H. Posner, F. C. Robson, Eileen E. Sanderson, Hoosen Ahmed Seedat, * M. J. Smith, Barbara Spence, Rosemary A. Spencer, W. R. M. Thompson, Margaret A. Thornton, Enid A. Wallace, Edith S. Warriner, Delma R. Welch, Trevor Westgarth, G. K. Wilson, Shan-Hsien Yuan.

D.P.M.—Robert Chambers, Monica D. Rowbotham.

* In absentia.

National University of Ireland

The degree of M.D. has been conferred on Dr. A. S. Breathnach for his published work.

Royal College of Surgeons of England

At a meeting of the council held on July 11 Sir James Paterson Ross was elected president of the college. Sir Russell Brock was re-elected and Sir Archibald McIndoe was elected vice-president. Colonel J. M. Shah (Karachi) was admitted to the fellowship as a member of 20 years' standing. Mr. R. S. Handley was re-elected and Mr. N. R. Barrett and Mr. W. M. Capper were elected members of the court of examiners.

The following lecturers were appointed:

Edridge-Green lecturer.—Prof. George Wald (Harvard).

Imperial Cancer Research Fund lecturers.—Dr. D. J. Trevan and Dr. D. C. Roberts.

Hunterian professors.—B. B. Hickey, malignant epithelial tumours in the Sudanese; J. P. Reidy, cleft lip and palate; Ajit Kumar Basu, chronic Bengal splenomegaly; R. A. Stephen, malignant testicular tumours; A. J. H. Rains, biliary obstruction; R. B. Welbourn, adrenocortical disorder; A. G. Jessiman, hypophysectomy in the treatment of breast cancer; W. W. Davey, anastomotic ulceration; D. A. Macfarlane, cancer of the adrenal cortex; J. P. Hopewell, uretero-intestinal anastomosis; J. F. Silva, old dislocations of the elbow; G. F. Murnaghan, mechanism of congenital hydronephrosis; Sydney Thomson, molluscum sebaceum.

Arris and Gale lecturers.—H. R. S. Harley, development of the sinus venosus type of atrial septal defect; D. H. M. Woollam, experimental approach to the problem of the congenital malformations; I. P. Todd, physiology of rectal sensation.

Erasmus Wilson demonstrators.—G. T. Allen, R. A. Goodbody, B. C. Morson, L. W. Proger, H. G. H. Richards, J. B. Walter.

Arnott demonstrators.—Jessie Dobson, A. A. Barton, R. J. Last, R. McP. Livingston, P. A. Ring, Frank Stansfield.

The following diplomas were granted, jointly with the Royal College of Physicians:

D.C.H.—R. C. Higgs, K. F. Tugwell, J. H. Stephenson, S. P. Khatua, B. Prasad.

D.T.M. & H.—N. S. Dixit, M. D. T. Najera, J. A. Najera Morrondo.

Royal Society of Medicine

Section of Anæsthetics.—This section offers a prize (£30) for the best paper submitted by senior registrars or registrars holding a clinical appointment in an anæsthetic department or hospital. All papers for the 1958 award must be submitted by Jan. 1, 1958. Further details can be had from the hon. secretary of the section, Royal Society of Medicine, 1, Wimpole Street, London, W.1.

Royal College of Physicians of Ireland

On July 5 the following were admitted to the licentiateship of the college :

H. A. Alfandary, A. B. E. Bryan-Brown, M. T. Brown, C. J. J. H. G. Burns, T. K. Cheah, R. R. Muir-Cochrane, E. S. De Hoedt, M. I. Essack, B. P. Geoghegan, M. J. Gill, G. S. H. Horner, T. W. Jefferies, H. Lautsch, R. D. Leeming, J. G. M. Ling, B. N. C. Littlepage, M. M. Marks, K. H. Mesbur, B. A. Molony, D. R. Moody, P. Murphy, J. D. McCafferty, E. I. MacSorley, Y. Nerman, M. O'Brien, J. N. O'Hanlon, E. F. Orfi, M. E. Owen, K. Paszkowska, S. L. Peltz, Z. A. Pisko-Dubienski, M. Rose, J. M. Rosenthal, B. S. Sehmi, M. J. Sherry, W. Z. Sniegocka, J. O. Sodipo, M. F. Stranc, I. Swiestowski, V. A. A. Winston.

Ciba Awards

The Ciba Foundation has made the following awards for 1956 for research into the problems of ageing :

Hedwig Saxl (Leeds) £350 ; G. F. Wilgram (Toronto) £350 ; R. J. Boucek (Miami, U.S.A.) £300 ; B. T. Donovan (London) and J. J. van der Werff ten Bosch (Leiden) £300 ; R. F. Hellon (Oxford) £300 ; H. G. Isler (Montreal) £300 ; L. Haranghy (Budapest) £200 ; Patricia Lindop (London) £200.

The awards are being offered again next year, the closing date for entries being Jan. 1, 1958. Further information may be obtained from the Ciba Foundation, 41, Portland Place, London, W.1.

Royal Society

Dr. M. J. R. Dawkins has been appointed to a Stothert research fellowship from Oct. 1. He is to work at University College Hospital Medical School on fœtal metabolism.

Nuffield Department of Plastic Surgery, Oxford

Prof. Frantisek Burian, director of the plastic surgery clinic of the Karlovy University, Prague, will give a lecture at the Radcliffe Infirmary, at 6 P.M., on Monday, July 22. He is to speak on cleft lip and cleft palate.

Health Visitors in Scotland

The number of health visitors in Scotland has now almost reached the figure of 1200 which was proposed in the Working Party on Health Visitors. Distribution is not, however, even and there are areas with shortages.

Birmingham Medical Institute

Section of Psychiatry.—On Wednesday, July 24, at 8 P.M. at the institute, 36, Harborne Road, Edgbaston, Prof. J. Elkes will speak on neuropharmacological agents—methods of assessment in animals and man.

Clinical Research in Scotland

The Department of Health has sent to the Scottish hospital boards a memorandum to guide them on the organisation and financing of clinical research. It is similar to the memorandum issued by the Ministry of Health in May (see *Lancet*, 1957, i, 985).

Society of Apothecaries of London

On July 16 the honorary freedom of the society was conferred on Sir Robert Young, who was introduced to the master, Dr. Macdonald Critchley, by Mr. A. M. A. Moore. The society's gold medal in therapeutics was bestowed on Prof. Ernst Chain, F.R.S., who was introduced to the master by Sir Charles Dodds, F.R.S.

International Congress of Radiology

The ninth International Congress of Radiology will be held in Munich from July 23 to 30, 1959. Further particulars may be had from the secretariat of the congress, Frankfurt am Main, Forsthausstr. 76.

International Society of Surgery

The congress of this society is to be held in Mexico City from Oct. 20 to 27, following the meeting of the American College of Surgeons in Atlantic City from Oct. 14–18, to which members of the society have been invited by the American college. Particulars can be had from the secretary-general, Prof. Paul Martin, 141, Rue Belliard, Brussels, or from Mr. H. W. S. Wright, 9, Weymouth Street, London, W.1.

Committee on the Cost of Prescribing

This committee for England and Wales is now prepared to receive written evidence from persons and organisations. The committee's terms of reference are :

Having regard to the increased cost of prescriptions issued in the National Health Service, to investigate the factors contributing to this cost and to make recommendations.

Memoranda of evidence should be sent as soon as possible to the secretary of the committee, Mr. E. L. Mayston, Ministry of Health, Savile Row, W.1.

The Osler Club

At the annual dinner on July 12 Dr. W. S. C. Copeman presided and the speakers included Prof. Robert Platt, P.R.C.P., and Sir Ernest Gowers. The annual oration was given by Prof. Charles Best, F.R.S., who described the history of the discovery of insulin.

National Fund for Poliomyelitis Research

This Fund has made a grant of £35,000 to build, equip, and staff for three years an experimental resettlement unit in the grounds of the Nuffield Orthopædic Centre, Oxford. If the result is satisfactory, it is planned to continue the work of the unit under the Oxford Regional Hospital Board.

The unit, which will be under the supervision of Prof. J. Trueta, will help paralysed patients, who at the end of their hospital treatment are still severely disabled, to regain as much social independence as possible. It will collect information about training, apparatus, and gadgets to help these patients in, for instance, the bathroom and the kitchen.

Compatibility Tests for Hospital Use

A symposium on this subject will be held under the ægis of the Sheffield Regional Hospital Board at the Royal Victoria Hotel, Sheffield, on Thursday, Oct. 17, at 10 A.M. The speakers will include Dr. Fred Stratton, Miss Marie Cutbush, D.SC., Dr. John Wallace, Dr. G. H. Tovey, Dr. George Discombe, Dr. Patrick Kidd, and Dr. K. L. G. Goldsmith. Further particulars may be had from the director, Regional Transfusion Centre, Sheffield, 10.

Mr. K. F. Darrell Waters, senior surgeon to St. Stephen's Hospital, Chelsea, was entertained to dinner by his colleagues on the occasion of his retirement on July 2 after 35 years' service to the hospital, including 25 as deputy medical superintendent.

CORRIGENDA : *University of Glasgow.*—We regret that the list of M.D. degrees conferred on July 6 was given incorrectly in our issue of July 13. It should have read as follows :

D. H. Clark, W. T. Irvine, G. B. S. Roberts (honours) ; Bernard Isaacs, J. M. Reid (high commendation) ; W. M. Fyfe, A. J. Nelson (commendation) ; Donald Cameron, A. A. Charteris, R. S. Ferguson, A. A. McKirdy.

Royal Institute of Public Health and Hygiene.—In our note of July 6 (p. 52) the institute's address should have been given as 28, Portland Place, London, W.1.

Appointments

ALLAN, FRANCES, M.B. Aberd., D.C.H., D.P.H. : assistant M.O. (maternity and child welfare), Liverpool.
BRANNEN, I. C., M.B. Aberd., M.R.C.P.E. : senior assistant M.O., Nottingham.
BREST, STUART, M.B. Wales, D.P.M. : senior assistant psychiatrist, Middlewood Hospital, Sheffield.
FISCHER, EMANUEL, L.R.C.P.I., D.P.M. : consultant psychiatrist to be designated medical superintendent, Balderton Hospital, near Newark.
LAVIS, PETER, M.B. St. And. : assistant M.O., Nottingham.
SWIFT, NANCY I., M.B. Lond., D.P.M. : S.H.M.O., psychiatric department, Royal Free Hospital group of hospitals, London.

Liverpool Regional Hospital Board :
EGAN, G. P., M.D. N.U.I., D.P.M. : consultant psychiatrist, Liverpool Psychiatric Day Hospital.
HOPKINS, C. A., M.B. Lpool, M.R.C.P. : assistant chest physician, East Liverpool group of hospitals.
NEVILLE, J. G., M.B. Lond., M.R.C.P., D.P.M., D.C.H. : consultant psychiatrist, Alder Hey Children's Hospital.

Newcastle Regional Hospital Board :
JACKSON, R. H., M.C., B.M. Oxfd, M.R.C.P. : consultant pædiatrician, Newcastle upon Tyne and South-East Northumberland groups of hospitals.
JONES, M. G., M.B. Wales : senior casualty officer, North West Durham group of hospitals.
HOLDEN, EDWARD, M.R.C.S., D.A. : consultant anæsthetist, Darlington group of hospitals.
ROBERTSON, D. I., M.B. Durh. : administrative M.O. at the Board's headquarters.
RYDER, J. B., M.B. Dubl., M.R.C.P. : assistant physician (geriatrics) (S.H.M.O.), Hexham group of hospitals.

Births, Marriages, and Deaths

BIRTHS

BRENTNALL.—On July 1, at University College Hospital, London, to Hazel (née Otridge), S.R.N., and Edward W. Brentnall, M.B.E., M.B.—a daughter, Jane.

MARRIAGES

LE VAY—HANSEN.—On May 17, in London, David Le Vay, M.S., to Sonja Johanne Hansen, of Odense.

BROADER SPECTRUM
for Greater Protection

Combining the orally effective Penicillin-V with three sulphonamides, this pleasant fruit-flavoured suspension is ideal for the treatment of bronchitis, otitis media, urinary and other mixed infections in young children. The joint attack provided by Penicillin-V and the sulphonamides is particularly valuable where the causative organism is only moderately susceptible to penicillin alone.

Each 5 cc. contains: 62.5 mg. Penicillin-V-Lilly
0.25 Gm. Sulphonamides

Average dose: ½ to 2 teaspoonfuls every six hours

Packing: Bottles to make 60 cc.

Also available:
Tablets Penicillin-V-Sulpha Lilly

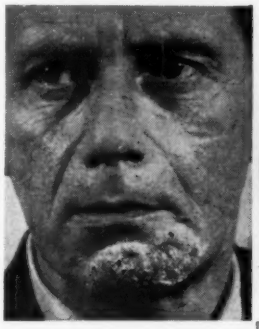
PENICILLIN-V LILLY
SULPHADIAZINE
SULPHAMERAZINE
SULPHADIMIDINE

SUSPENSION

PENICILLIN-V-SULPHA LILLY
PAEDIATRIC

Lilly

ELI LILLY & COMPANY LIMITED, BASINGSTOKE, ENGLAND



Diagnosis: Obstinate eczema of the face. Photograph taken before treatment with "F99".

Photograph taken after 18 weeks' treatment with one "F99" capsule and one application of "F99" ointment daily.

℞ F99 for

OINTMENT
CAPSULES
LIQUID

ECZEMA
VARICOSE ULCERS
FURUNCULOSIS

It has been shown beyond question by large scale serum-lipids studies that a good proportion of patients suffering from intractable skin conditions have a deficiency of the essential fatty acids. It is not possible to carry out these studies in everyday practice, but any patient with eczema or furunculosis who fails to respond to symptomatic treatment should most certainly be tried with essential fatty acids "F99." A high proportion of these patients will be found to respond.
In gravitational ulcers, where the skin is "undernourished," the application of additional essential fatty acids rarely fails to heal the wound.

Literature on request

INTERNATIONAL LABORATORIES LTD. *Dept. LT34,* **205, HOOK ROAD, CHESSINGTON, SURREY**

Ride-a-cock-horse today but tomorrow she will be in hospital. Her parents are putting their faith in medicine to make her well again. The doctors and nurses, in their turn, put their faith in British Oxygen equipment and gases. In thousands of cases, every day, British Oxygen equipment and gases are used to ease pain and to save lives.

BOC **BRITISH OXYGEN**

BRITISH OXYGEN GASES LTD., MEDICAL DIVISION, GREAT WEST ROAD, BRENTFORD, MIDDLESEX

Makers and suppliers of anæsthetic, analgesic and therapeutic equipment and gases.

26

Cuts plaster

but it won't cut skin

This Desoutter instrument was developed specially to make the removal of surgical plasters a fast and safe operation — safe for both patient and operator. The circular saw does not rotate, it oscillates through an arc only a few degrees wide at about 18,000 strokes per minute. This ultra rapid short stroke movement will not cut when it is in contact with mobile skin or soft material. But when up against hard materials like plaster it is an extremely efficient cutter. Please write for the leaflet which explains the method of use.

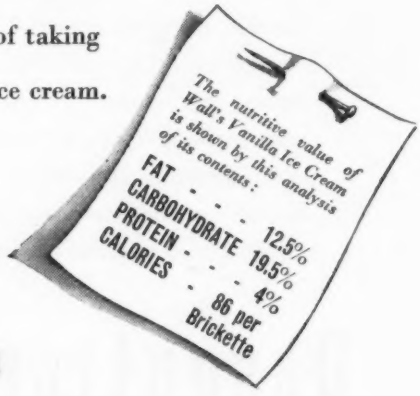
Desoutter CAST CUTTER

Desoutter Bros., Ltd., The Hyde, Hendon, London, N.W.9 Telephone: Colindale 6346 (5 lines). Telegrams: Despnuco, Hyde, London
CRC15M.

THE VALUE OF ICE CREAM FOR INVALID DIETS

Wall's Ice Cream is a well-balanced food, with valuable fat, carbohydrate and protein content. It is easily assimilated and of high calorific value. Very often patients with poor appetites readily accept and enjoy ice cream, and for this reason also, hospitals include ice cream in their invalid diet.

There is no more enjoyable way of taking nourishment than by eating good ice cream.


The nutritive value of Wall's Vanilla Ice Cream is shown by this analysis of its contents:
FAT - - - 12.5%
CARBOHYDRATE 19.5%
PROTEIN - - - 4%
CALORIES - 86 per Brickette

Wall's
ICE CREAM

—A PALATABLE, NOURISHING AND EASILY ASSIMILATED FOOD, RARELY CONTRA-INDICATED

T. WALL & SONS LTD., LONDON; GODLEY, CHESHIRE; EDINBURGH ICE 504-1803

Alpha tocopherol (Vitamin E) for CARDIOVASCULAR-RENAL DISEASES

The natural vitamin E available only since 1948 must not be confused with the wheat germ oil in use before that date with its limitations as to potency and stability.

The natural vitamin E of today comprises a concentrate distilled from the oils of cottonseed, palm, soya bean, etc.

The standard laid down by the League of Nations is that 1 international unit = 1 mgm. of d.l. *alpha* tocopheryl acetate.

The VITA-E Gelucap (75 i.u.) heads the list of brands approved by the Vitamin E Society and is that recommended by the Shute Foundation for Medical Research and used with such conspicuous success at the Shute Institute.

LITERATURE ON REQUEST

Sole Manufacturers:

THE BIOGLAN LABORATORIES LTD.
HERTFORD, HERTS, ENGLAND.

Specialists in Hormones and Vitamins

---

no dandruff on this comb

COMPLETE CONTROL of common dandruff in 92 to 95% of cases . . . control of seborrhoeic dermatitis of the scalp in 81 to 87% of cases . . . this represents the clinically proved effectiveness of SELSUN. It restores the scalp to a normal, healthy state, keeps it free of scales and excessive sebum for a period of one to four weeks after each application. Itching and burning usually stop after two or three applications. SELSUN is applied while washing the hair. It reaches all areas of the scalp, is simple and pleasant to use. Rinses out easily, leaving the scalp clean and odourless. Does not discolour the hair; leaves no greasy stains. Abbott

Available in 2 and 4 fl. oz. bottles, with directions for use.

SELSUN REGD.

(Selenium Sulphide, Abbott)

ABBOTT LABORATORIES LIMITED · LONDON

THIS IS DALZOBAND

No. 2
Zinc Paste medicament

No. 3
Zinc paste and ichthammol 2%
(extra moist no. 3x)

No. 4
Zinc paste with urethane 2%
and ichthammol 2%

No. 5
Zinc paste with urethane 2%
and calamine 5.75%

No. 6
Zinc paste with coal tar 3%

A **DALMAS** PRODUCT

Dalzoband medicated bandages are always ready for use. They never lose their moistness or become uncomfortable with wear. In a choice of five types you will find a dressing exactly suiting your purpose, each conforming to its respective conditions in the Drug Tariff.

DALMAS LIMITED · LEICESTER & LONDON Established 1823

BARBEVITE ELIXIR

FOR NEURASTHENIA AND ANXIETY STATES

This pleasantly flavoured elixir contains Phenobarbitone together with Vitamins B_1, B_2, B_6 and Nicotinamide. Ideally suited for the treatment of various conditions associated with the B complex deficiencies such as general fatigue, anorexia, gastro-intestinal disturbances, tachycardia, irritability and depression.

FORMULA.
Phenobarbitone B.P. ¼ grain. Aneurin Hydrochloride B.P. 1.5 mgm. Riboflavine B.P. 1.0 mgm. Pyridoxine Hydrochloride B.P.C. 0.17 mgm. Nicotinamide B.P. 10. mgm. Glycerin B.P. 42 minims. Alcohol B.P. 9 minims. Colour and flavour a sufficiency. Base to 1 fluid drachm.

POISON | S1 | S4

PRESENTATION.
In screw-capped bottles. 5 fl. ozs. 5/10 : 20 fl. ozs. 21/8 : 80 fl. ozs. 76/10. Subject to professional discount. Dispensing packs exempt from purchase tax. Samples available on request.

Manufactured in the laboratories of
JAMES WOOLLEY, SONS & CO. LTD., VICTORIA BRIDGE · MANCHESTER 3.

VV61

HANGER appliance for Syme's amputation, comprising blocked leather socket, three stainless steels (front bifurcated) self-lubricating ankle joint, wood foot with toe joint, with leather calf gaiter positioned as required.

EXPERIENCE . . .

the unseen component

The unseen component is built into every limb manufactured by the HANGER Organisation at Roehampton. For over 40 years HANGER has been specialising in the production of Light Metal and Willow Legs, and by intensive research has effected improvements in design without parallel in the history of prosthesis. The HANGER leg is approved by the Ministry of Health and by very many overseas Governments. Fully equipped and expertly staffed Fitting Rooms are established at every Ministry of Health Limb Fitting Centre in the United Kingdom. Literature and any special information required will be gladly sent on request.

HANGER
ARTIFICIAL LIMBS

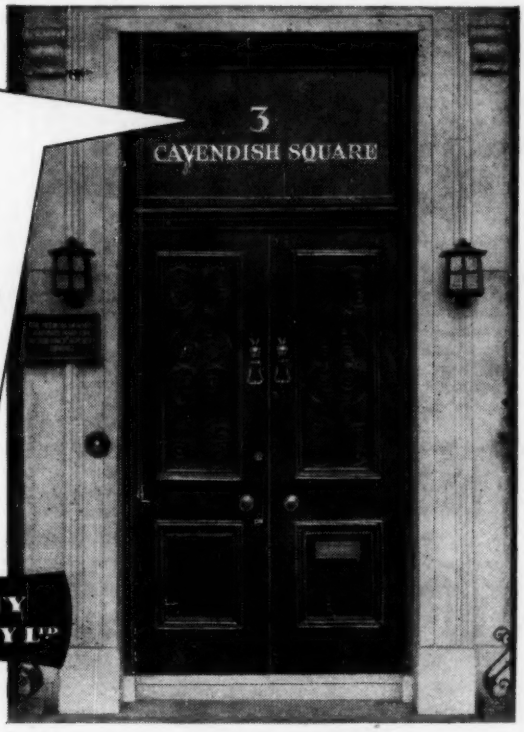
J. E. HANGER & CO. LTD
ROEHAMPTON . LONDON, S.W.15

Where Medical Practitioners find Specialists in

NON-CANCELLABLE
— with Profit
SICKNESS & ACCIDENT INSURANCE

✻ LIFE ASSURANCE
✻ PERSONAL PENSION POLICIES

When you are BUYING A NEW CAR ask for details of the HIRE PURCHASE SCHEME of the MEDICAL SICKNESS FINANCE CORPORATION LTD.



Please write for particulars, mentioning this advertisement.

MEDICAL SICKNESS ANNUITY AND LIFE ASSURANCE SOCIETY LTD

3 CAVENDISH SQUARE · LONDON · W.1
(Telephone: LANgham 2991)

Availability of Vitamins in Yeast

Deficiencies of single factors of the Vitamin B Group do not occur. Accordingly, even if a deficiency condition appears to result from the lack of an individual factor of the group and it is considered necessary to give intensive treatment with this factor, *the entire Vitamin B Complex should always be administered concurrently.*

It is, however, extremely important, in view of suggestions in recent publications, that the vehicle selected as a source of the entire B Complex does not withhold its vitamin content from the patient.

Human experiments show that the rich, natural vitamin potency of Aluzyme is totally available to the human system

● *Aluzyme is not advertised to the public and may be prescribed on* **form E.C.10.**

ALUZYME
The NON-AUTOLYSED YEAST
with completely available Vitamins

Have you had your free copy of "The Therapeutic and Nutritional Value of Brewers' Yeast"?
Professional Samples and Prices on request from :—

ALUZYME PRODUCTS
PARK ROYAL ROAD, LONDON, N.W.10.

From milk to mixed diet

HOW HEINZ STRAINED FOODS HELP

Mothers of three or four-month-old babies often need your practical advice about how to start baby on a mixed diet.

When you suggest Heinz Strained Foods you can do so with complete confidence. The 19 different foods, introduced gradually from about three-months onwards, between them offer scope for a varied diet. They are cooked and strained under strictly controlled conditions, with the minimum loss of food values. And, of course, they are prepared much more hygienically than they would be in an ordinary kitchen.

For full details of the nutrient values of the 19 varieties of Heinz Strained Foods, write to Dept. T2, H. J. Heinz Co. Ltd., Harlesden, London N.W.10.

HEINZ 57
Strained Foods

MEAT BROTHS · SOUPS · VEGETABLES · SWEETS · CEREAL

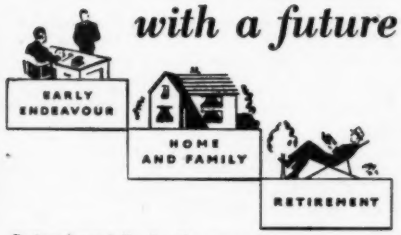
THE SAFEST AND BEST PREPARATION OF OPIUM

Nepenthe contains all the constituents of opium and has been prescribed for over 100 years. It has been found by generations of practitioners to be the best preparation of opium as it does not cause the unpleasant after-effects usually attributed to opiates. It can be given over a considerable period and the effect remains invariably constant.
Packed in 2-oz., 4-oz., 8-oz. and 16-oz. bottles, and for injection in ½-oz. rubber-capped bottles, sterile, ready for use.

NEPENTHE Regd.

(FERRIS)
FERRIS & CO LTD
BRISTOL
Tel: 21381 Grams: Ferris Bristol

For the young man with a future



Designed specially for the young man

'BOTH WAYS' *is more than ever the policy of the moment*

Let it help to smooth *your* road through the years of endeavour ahead. You will put yourself under no obligation by writing for full details to . . .

Scottish Widows' Fund

Head Office: 9 St. Andrew Square, Edinburgh 2.
London Offices: 28 Cornhill, E.C.3. 17 Waterloo Place, S.W.1

IF THERE IS NO ORGANIC DISEASE TO ACCOUNT FOR

ENURESIS

TREATMENT BY

The "CHIRON" NOCTURNAL ENURESIS ALARM

(PROV. PAT. NO. 16125)

IS INDICATED

THIS TREATMENT IS BASED ON PAVLOV'S THEORY OF CONDITIONED REFLEXES AND HAS PROVED SUCCESSFUL IN 90% OF CASES

SEE *LANCET*, 19 FEB. 55, P. 391 & 26 MAR. 55, P. 676.

FOR FURTHER INFORMATION WRITE TO:—

DOWN BROS. and MAYER & PHELPS LTD.

Surgical Instrument Makers

32-34, New Cavendish Street, London, W.1

Telephone: WELbeck 3764, 8573.

Highly Efficient in

INFANT ECZEMA

Because of its freedom from harsh, irritating drugs, soothing Resinol Ointment is especially grateful in the external treatment of infant eczema. Quickly allays itching. Simple and painless in application. Provides sustained action, and does not interfere where other forms of therapy are also indicated. From all chemists.

RESINOL OINTMENT AND SOAP

Full particulars from J. M. CURRY Agent for THE RESINOL CO., 12, FITZROY STREET, LONDON W.1

WYKE HOUSE HOSPITAL

ISLEWORTH, MIDDLESEX

Telephone: EALing 7000

A private home for the individual treatment of all forms of nervous and mental illness, including alcoholism.

H. PULLAR-STRECKER, M.D. G. W. SMITH, O.B.E., M.B., CH.B.

CHISWICK HOUSE

PINNER, MIDDLESEX

Telephone: PINNER 234

A private Nursing Home for patients suffering from all forms of Nervous and Psychological illness. Forty-four patients of both sexes. A certain number of elderly patients received. All modern forms of treatment. Psychotherapy, Electroplexy, Modified Insulin, etc. Two country houses in adjoining grounds of 5 and 6 acres each respectively, 12 miles north-west of London. Frequent trains Baker Street Station to Pinner. One-quarter of a mile from Pinner Station.

Apply to the Medical Director, DOUGLAS MACAULAY, M.D., D.P.M.

HEIGHAM HALL, NORWICH

PRIVATE MENTAL HOME for Nervous and Mental illness. All types of treatment carried out. Accommodation for Alcoholics and Addicts available. Special Geriatric Unit now open. Fees from 7 gns. per week upwards according to requirements.

Apply to Dr. J. A. SMALL Telephone: Norwich 20080

NORTHUMBERLAND HOUSE

Psychiatric Nursing Home

235-7 BALLARDS LANE, N.3 Tel.: FINchley 5283

Resident Med. Director Dr. R. M. RIGGALL, Mem. Brit. Psycho-Analytical Socy.

Deep insulin coma unit, psychotherapy, etc.

RUTHIN CASTLE, NORTH WALES

A Private Clinic, the first in Great Britain, for investigation and treatment of all forms of disease, except infectious and mental

Nursing, dietetic, massage, x-ray and laboratory departments **Central heating and a lift to all floors**

Inclusive charges Apply SECRETARY Telephone: Ruthin 66

ST. ANDREW'S HOSPITAL FOR NERVOUS AND MENTAL DISORDERS
NORTHAMPTON

PRESIDENT: THE EARL SPENCER

MEDICAL SUPERINTENDENT: THOMAS TENNENT, M.D., F.R.C.P., D.P.H., D.P.M.

This Registered Hospital is situated in 130 acres of park and pleasure grounds. Voluntary patients, who are suffering from incipient mental disorders or who wish to prevent recurrent attacks of mental trouble; temporary patients, and certified patients of both sexes are received for treatment. Careful clinical, biochemical, bacteriological, and pathological examinations. Private rooms with special nurses, male or female, in the Hospital or in one of the numerous villas in the grounds of the various branches can be provided.

WANTAGE HOUSE

This is a Reception Hospital in detached grounds with a separate entrance, to which patients can be admitted. It is equipped with all the apparatus for the complete investigation and treatment of Mental and Nervous Disorders by the most modern methods; insulin treatment is available for suitable cases. There is an Operating Theatre, a Dental Surgery, an X-ray Room, an Ultraviolet Apparatus, and a Department for Diathermy and High-frequency treatment. It also contains Laboratories for biochemical, bacteriological, and pathological research. Psychotherapeutic treatment is employed when indicated.

MOULTON PARK

Two miles from the Main Hospital there are several branch establishments and villas situated in a park and farm of 650 acres. Milk, meat, fruit, and vegetables are supplied to the Hospital from the farm, gardens, and orchards of Moulton Park. Occupational therapy is a feature of this branch, and patients are given every facility for occupying themselves in farming, gardening, and fruit growing.

BRYN-Y-NEUADD HALL

The seaside house of St. Andrew's Hospital is beautifully situated in a park of 330 acres, at Llanfairfechan, amidst the finest scenery in North Wales. On the North-West side of the Estate a mile of sea coast forms the boundary. Patients may visit this branch for a short seaside change or for longer periods. The Hospital has its own private bathing house on the seashore. There is trout-fishing in the park.

At all the branches of the Hospital there are cricket grounds, football and hockey grounds, lawn tennis courts (grass and hard courts), croquet grounds, golf courses, and bowling greens. Ladies and gentlemen have their own gardens, and facilities are provided for handicrafts, such as carpentry, etc.

For terms and further particulars apply to the Medical Superintendent (TELEPHONE: Northampton 4354 (3 lines)), who can be seen in London by appointment.

CLIFFDEN, TEIGNMOUTH

For the early treatment of nervous disorders and patients needing rest and care

A well-appointed House with spacious balconies and extensive views of the South Devon Coast. Beautiful gardens and own dairy in 35 acres in the same grounds, **ROWDENS**, a comfortable house with lovely views. Private road to the beach

There is also a charming house, **EBWORTHY, MANATON, DARTMOOR**, situated in 25 acres, 1100 ft. up for bracing moorland air

Resident Physicians—BERTHA M. MULES, M.D., B.S ANNE S. MULES, M.R.C.S., L.R.C.P. *Telephones*—TEIGNMOUTH 289 and 537

THE MEDICAL PROTECTION SOCIETY LIMITED

Over 60 years experience in medical defence and protection

Complete indemnity granted to members in cases undertaken on their behalf

ANNUAL SUBSCRIPTION: £1 for first three years for newly qualified entrants and £2 thereafter

Full particulars from the Secretary (Dr. Alistair French), Victory House, Leicester Sq., W.C.2. Gerrard 4553 and 4814

Vacancies

ACADEMIC AND EDUCATIONAL SECTION *Page* 36

ADMINISTRATIVE
Scotland. North-Eastern R.H.B. Deputy Group Med. Supt. 37

ANÆSTHETICS
Guy's, S.E.1. H.O. & Sr. H.O. .. 39
National Hosps. for Nervous Diseases. Sr. Reg. 39
West Ham Group H.M.C. Sr. H.O. .. 40
Birmingham United Hosps. Sr. H.O. 41
Bolton & Dist. H.M.C. Sr. H.O. .. 41
Burton-on-Trent. Gen. Jr. H.M.O. 41
Bury & Rossendale H.M.C. Jr. H.M.O. 41
Chelmsford Hosps. Sr. H.O. 42
Hemel Hempstead. West Herts. Regs. 43
Ilford. King George. Sr. H.O. .. 43
Leeds R.H.B. Reg. 43
Liverpool R.H.B. Sr. H.M.O. .. 37
Manchester R.H.B. Reg. 44
Medway & Gravesend H.M.C. Sr. H.O. 44
North West Met. R.H.B. P.-t. Cons. .. 37
Plymouth. South Devon & East Cornwall. Sr. H.O. 45
Salford H.M.C. Sr. H.O. 46
Wakefield. Pinderfields Gen. Jr. H.M.O. 46
Welsh R.H.B. Reg. 48
Welsh R.H.B./United Cardiff Hosps. Sr. Reg. & Reg. 48
U.S.A. Cambridge, Mass. Residencies 49

CARDIOLOGY
Middlesex, W.1. Sr. Reg. 39

CASUALTY
Connaught, E.17. Sr. H.O. 38
Hampstead Gen., N.W.3. Sr. H.O. .. 39
Lambeth, S.E.11. Sr. H.O. 39
Princess Beatrice, S.W.5. Sr. H.O. .. 39
Queen Mary's Hosp. for the East End, E.15. H.O. 39
Brighton. Royal Sussex County. H.O.'s 41
Cardiff. St. David's. Sr. H.O. or Locum 41
Crewe & Dist. Mem. Sr. H.O. .. 42
Edgware Gen. Locum Reg. 42
Hemel Hempstead. West Herts. Locum Jr. H.M.O. 42
Hitchin. Lister. Jr. H.M.O. 43
Liverpool United Hosps. Temp. Sr. H.O. 44
Llanelly. Sr. H.O. 44
Luton & Dunstable. Sr. H.O. .. 44
Maidstone. West Kent Gen. Sr. H.O. 44
Merthyr Tydfil. St. Tydfil's. Sr. H.O. 44
Newport, Mon. Royal Gwent. Sr. H.O. 45
Reading & Dist. H.M.C. Sr. H.O. .. 45
Salford Royal. Pre-reg. H.O. .. 46
Swindon & Dist. H.M.C. Sr. H.O. .. 46
Taunton & Somerset. Sr. H.O. .. 46
Wallasey. Victoria Central. Jr. H.M.O. 48

CHEST AND TUBERCULOSIS
Chelmsford. Broomfield. Locum Sr. Reg. 42
St. Helens & Dist. H.M.C. H.O. or Sr. H.O. 46
Ibadan, Nigeria. University College Hosp. Sr. Reg. or Reg. 48

DERMATOLOGY
Birmingham. Skin. Sr. H.O. or H.O. 41
Cambridge. Addenbrooke's. Reg. .. 41
Ilford. King George. P.-t. Clin. Asst. 43
Welsh R.H.B. Locum Cons. 37

EAR, NOSE, AND THROAT
Royal National T.N. & E., & Inst. of Laryngology & Otology. Sr. Reg. 39
Whittington, N.19. Locum Sr. H.O. 40
Aberdeen Gen. Hosps. B.O.M. Reg. 40
Birmingham. Dudley Road. H.O. or Sr. H.O. 40
Cambridge. Addenbrooke's. H.O. .. 41
Carlisle. Cumberland Infy. Sr. H.O. 42
Guildford. Royal Surrey County. Sr. H.O. 42
Lancaster. Beaumont. Sr. H.O. .. 43
Maidstone. Kent County Ophthalmic & Aural. Sr. H.O. 44
Reading & Dist. H.M.C. Sr. H.O. .. 45

GENITO-URINARY
Salford Royal. Pre-reg. H.O. .. 46

HÆMATOLOGY
Manchester United Hosps. Sr. H.O. 44

INFECTIOUS DISEASES

Hendon Isolation, N.W.9. Jr. H.M.O. 39
Huddersfield. Mill Hill. Jr. H.M.O. 43
Plymouth. Scott Isolation. Sr. H.O. & H.O. 45

MEDICINE

Bethnal Green, E.2. Pre-reg. H.O. .. 38
Central Middlesex, N.W.10. Reg. .. 38
Central Middlesex, N.W.10. Sr. H.O. 38
Connaught, E.17. H.O. 38
North Middlesex, N.18. H.O.'s .. 39
South East Met. R.H.B. P.-t. Cons. 37
St. Charles', W.10. H.O. 40
Ashford, Middx. Sr. H.O. 40
Barnstaple. North Devon Infy. Pre-reg. H.O. 40
Bedford Gen. Pre-reg. H.O. 40
Bideford & Dist. Sr. H.O. 41
Birmingham United Hosps. Sr. Reg. 41
Colchester Group H.M.C. H.O. .. 42
Driffield. East Riding Gen. H.O. .. 42
Enfield. War Mem. Sr. H.O. .. 42
Epsom Dist. Reg. 42
Huddersfield Royal Infy. Pre-reg. H.O. 43
Huntingdon County. H.O. 43
Leeds R.H.B. Reg. 43
Lincoln County. Pre-reg. H.O. .. 43
Macclesfield. Sr. H.O. 44
Manchester United Hosps. Reg. .. 44
Newmarket Gen. H.O. 45
Nottingham City. H.O. 45
Nottingham Gen. Sr. H.O.'s 45
Nottingham. Highbury. Sr. H.O. .. 45
Pontypridd & Rhondda H.M.C. H.O. 45
Portsmouth Group H.M.C. Sr. H.O. & Pre-reg. H.O.'s 45
Rochdale & Dist. H.M.C. Sr. H.O. & H.O.'s 45
Rochford, Essex. Gen. Locum Sr. H.O. 45
Romford. Oldchurch. H.O. 45
Salisbury Gen. H.O. 46
Slough. Upton. Pre-reg. H.O. .. 46
Southampton Gen. H.O. 46
Stoke-on-Trent. North Staffs Royal Infy. Pre-reg. H.O. 46
Wakefield. Gen. H.O. 48
Welsh R.H.B. Reg. 48
Wigan & Leigh H.M.C. Pre-reg. H.O. 49
Australia. Royal South Sydney. Med. Supt. 38
Ibadan, Nigeria. University College Hosp. Sr. Reg. & Reg. 48

NEUROLOGY

King's College Hosp., S.E.5. Locum Sr. Reg. 39
National Hosps. for Nervous Diseases. Sr. Reg. 39

NEUROSURGERY

Birmingham. Midland Centre for Neurosurgery. Sr. H.O. 40
Manchester R.H.B. Reg. 44
Newcastle Gen. Sr. H.O.'s 45
Scotland. South-Eastern R.H.B. Sr. Reg. 45

OBSTETRICS AND GYNÆCOLOGY

Elizabeth Garrett Anderson, N.W.1. H.O. 39
Forest Gate, E.7. Pre-reg. H.O. .. 38
Barrow-in-Furness. Risedale Maty. Sr. H.O. 40
Birmingham R.H.B. Reg. 40
Birmingham. Solihull. Sr. H.O. & Pre-reg. H.O. 41
Bishop Auckland Gen. H.O. 41
Brighton & Lewes H.M.C. H.O. .. 41
Burton Gen. & Andressey. H.O. .. 41
Canterbury. Kent & Canterbury. H.O. 41
Carlisle. Cumberland Infy. H.O. .. 42
Chichester. St. Richard's & Royal West Sussex Hosps. Sr. H.O. .. 42
Manchester United Hosps. Sr. H.O.'s 44
Rochdale & Dist. H.M.C. Pre-reg. H.O. 45
Shrewsbury. Cross Houses. Pre-reg. H.O. 45
Southampton Gen. Pre-reg. H.O. .. 46
Swindon & Dist. H.M.C. H.O. .. 46
Wakefield. Pinderfields Gen. Sr. H.O.'s 48
Walsall H.M.C. H.O. 48
Whitehaven, Cumberland. H.O. or Sr. H.O. 48
Ibadan, Nigeria. University College Hosp. Sr. Reg. & Reg./Sr. H.O. .. 48

OPHTHALMOLOGY

Newcastle R.H.B. Cons. 38
North East Met. R.H.B. P.-t. Sr. H.M.O. 37

ORTHOPÆDICS

Guy's, S.E.1. Reg. 39
St. Mary's, W.2. Reg. 40
Beverley, Westwood. H.O. 40
Carlisle. Cumberland Infy. Sr. H.O. 42
Crewe & Dist. Mem. Reg. 42
Derby. Derbyshire Royal Infy. Reg. 42
Ipswich & East Suffolk. H.O. .. 43
Leeds R.H.B. Reg. 43
Plymouth. Mount Gold. Sr. H.O... 45
Portsmouth Group H.M.C. Pre-reg. H.O. 45
Romford. Oldchurch. H.O. 45
Scotland. South-Eastern R.H.B. Reg. 45
Sheffield. King Edward VII Orthopædic. Sr. H.O. 45
Southampton. Royal South Hants. H.O. & Sr. H.O. 46
Stoke-on-Trent Orthopædic. Sr. H.O. 46
Wakefield. Pinderfields Gen. Sr. H.O.'s 48
Worcester Royal Infy. H.O. 48

PÆDIATRICS

Royal Free Hosp. Group. Sr. Reg. .. 40
St. Stephen's, S.W.10. H.O. .. 40
Birmingham. Dudley Road. H.O. .. 40
Ipswich & East Suffolk. Sr. H.O... 43
Leeds R.H.B. P.-t. Cons. 37
Manchester. West Manchester H.M.C. Sr. H.O. 44
Portsmouth Group H.M.C. H.O. & Pre-reg. H.O. 45
Reading. Royal Berks. H.O... .. 45

PATHOLOGY

Elizabeth Garrett Anderson, N.W.1. Reg. 39
Hampstead, N.W.3. Sr. Reg... .. 39
Royal College of Surgeons & St. James' Hosp., S.W.12. Reg. .. 39
St. George's, S.W.1. Sr. H.O. .. 40
St. James', S.W.12. Sr. Reg. .. 40
Birmingham R.H.B. Regs. 40
Birmingham United Hosps. Sr. H.O. 41
Liverpool United Hosps. Reg. .. 44
Manchester R.H.B. Locum Sr. H.M.O. or Reg. 38
Manchester. Withington. Sr. H.O. .. 44
Newcastle R.H.B. Cons. 38
Scotland. Western R.H.B. Regs. .. 45
Sheffield. City Gen. Reg. 45
Wolverhampton Group. Jr. H.M.O. 48

PLASTIC SURGERY

Aylesbury. Stoke Mandeville. Sr. H.O. 40
Glasgow Royal Infy. H.O. 42

PSYCHIATRY

Bethlem Royal & Maudsley. Reg. & Sr. H.O. 38
Guy's, S.E.1. Sr. Reg. 38
Tooting Bec, S.W.17. Temp. Jr. H.M.O. 40
Bexley, Kent. Locum Sr. Reg. .. 41
Birmingham R.H.B. & United Hosps. Sr. Reg. 41
Denbigh. North Wales Hosp. for Nervous & Mental Disorders. Jr. H.M.O. or Sr. H.O. 42
Glasgow. Gartloch. H.O.'s. 42
Leeds R.H.B. Regs. 43
Leeds R.H.B. Sr. H.M.O. 37
Lincoln. Lawn. Jr. H.M.O. or Sr. H.O. (F.-t. or Locum) 44
Liverpool R.H.B. Cons. & Deputy Med. Supt. 37
North West Met. R.H.B. Sr. H.M.O. & P.-t. Cons. 37
Scotland. South-Eastern R.H.B. Regs. 45
Sheffield R.H.B. Sr. Reg. 45
Shrewsbury. Shelton Mental. Jr. H.M.O. 46
St. Albans. Shenley. Sr. H.O. .. 46
Worcester. Powick. Locum Sr. H.O. 48

RADIOLOGY

Middlesex, W.1. Sr. H.O. 39
North East Met. R.H.B. P.-t. Cons... 37
Birmingham R.H.B. P.-t. Cons. .. 37
Manchester R.H.B. Sr. Regs. .. 44
Northwood. Mount Vernon. Reg. .. 45
Scotland. South-Eastern R.H.B. Reg. 45
South Africa. Provincial Admin. of Cape of Good Hope. Med. Pract. (Grade C) 38

RADIOTHERAPY

Charing Cross, W.C.2. Reg. 38
Middlesex, W.1. Reg. 39
Leeds United Hosps. Reg. 43
Leeds United Hosps. Sr. H.O. .. 43
Sheffield National Centre for Radiotherapy. Sr. H.O. or Reg. .. 45
New Zealand. Otago Hosp. Board. Jr. or Sr. Specialist 38

SURGERY

Hackney, E.9. Pre-reg. H.O. .. 39
Highlands Gen., N.21. H.O... .. 39
Hosp. of St. John & St. Elizabeth, N.W.8. Reg. 39
Metropolitan, E.8. Locum Reg. .. 39
Mildmay Mission, E.2. Pre-reg. H.O. 39
North East Met. R.H.B. P.-t. Cons... 37
Princess Beatrice, S.W.5. Locum Reg. 39
Royal Free, W.C.1. P.-t. Cons. .. 37
St. Andrew's, E.3. H.O.'s 40
Beverley. Westwood. H.O. 40
Bishop Auckland. Gen. H.O. .. 41
Blackburn & Dist. H.M.C. H.O.'s.. 41
Bournemouth. Christchurch. Sr. H.O. 41
Burton-on-Trent. Gen. Pre-reg. H.O. 41
Bury & Rossendale H.M.C. H.O.'s.. 41
Canterbury. Kent & Canterbury. H.O. 41
Carlisle. Cumberland Infy. Sr. H.O. & H.O.'s 42
Chertsey. St. Peter's. Sr. H.O. or Pre-reg. H.O. 42
Colchester Group H.M.C. H.O.'s .. 42
Crewe & Dist. Mem. Pre-reg. H.O.'s 42
Ebbw Vale Gen. Sr. H.O. 42
Enfield. Chase Farm. Pre-reg. H.O... 42
Grantham & Kesteven Gen. Reg. .. 42
Hastings. St. Helen's. Pre-reg. H.O. 42
Hexham Gen. H.O. 42
Hillingdon, Middx. Reg. 42
Huddersfield Royal Infy. H.O.'s .. 43
Huntingdon County. H.O. 43
Ipswich & East Suffolk. Pre-reg. H.O. 43
Ipswich & East Suffolk. H.O.'s .. 43
Kettering & Dist. Gen. Pre-reg. H.O. 43
Kingston, Surrey. Sr. H.O. 43
Leeds. Chapel Allerton. Sr. H.O. .. 43
Leeds R.H.B. Reg. 43
Leeds United Hosps. Reg. 43
Lincoln County. Pre-reg. H.O.'s .. 44
Lincoln County. Sr. H.O. 43
Liverpool. Mossley Hill. Sr. H.O. .. 44
Louth. County. Sr. H.O. 44
Luton & Dunstable. Locum Sr. Reg. 44
Manchester. Booth Hall Child's. Reg. 44
Manchester R.H.B. Regs. 44
Mid Glamorgan H.M.C. Sr. H.O. & H.O.'s 44
Newmarket Gen. H.O. 45
Nottingham City. H.O. 45
Nottingham Gen. Sr. H.O. & H.O.'s 45
Oxford R.H.B. Reg... 45
Pontefract Gen. Infy. H.O... 45
Pontypridd & Rhondda H.M.C. H.O. 45
Portsmouth Group H.M.C. Pre-reg. H.O.'s 45
Reading. Battle. H.O. 45
Rochdale & Dist. H.M.C. H.O.'s .. 45
Romford. Victoria. H.O. 45
Salford. Hope. H.O.'s 46
Salisbury Gen. H.O. 46
Scotland. South-Eastern R.H.B. Sr. Reg. & Reg. 45
Scotland. Western R.H.B. Regs. .. 45
Scunthorpe & Dist. War Mem. Reg. 45
Slough. Upton. Pre-reg. H.O. .. 46
Southport Gen. Infy. H.O. 46
St. Helens & Dist. H.M.C. H.O.'s .. 46
Stockport & Buxton H.M.C. H.O.'s 46
Stoke-on-Trent. North Staffs Royal Infy. Pre-reg. H.O. 46
Taunton & Somerset. H.O. 46
Wakefield. Clayton. H.O. 48
Walsall H.M.C. H.O.'s 48
Welsh R.H.B. Locum Sr. Reg. .. 48
Wigan & Leigh H.M.C. Pre-reg. H.O.'s 49
Worcester Royal Infy. H.O. 48
Workington Infy. Pre-reg. H.O. or Sr. H.O. 48
York Military (Civilian Wing). Sr. H.O. 49

THORACIC SURGERY

South-East Regional Thoracic Surgery Unit, S.E.18. Sr. H.O. 40
Bristol. Cossham & Frenchay H.M.C. Sr. H.O. 41
Wakefield. Pinderfields Gen. Sr. H.O.'s 48

UROLOGY

St. Peter's, St. Paul's & St. Philip's Hosps., W.C.2. Sr. Reg. 40
Hastings. Buchanan. Locum Sr. H.O. 42

VENEREOLOGY

Brighton & Lewes & Worthing Groups. P.-t. Locum 37

PUBLIC APPOINTMENTS 49

MISCELLANEOUS 50

The Terms and Conditions of Service of Hospital Medical and Dental Staff apply to all N.H.S. hospital posts we advertise, unless otherwise stated. Canvassing disqualifies, but candidates may normally visit the hospital by appointment.

Academic and Educational

UNIVERSITY OF GLASGOW and ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW

POSTGRADUATE MEDICAL EDUCATION COMMITTEE

A SPECIALIST CONFERENCE ON PSYCHIATRY will be held in the Hall of the Royal Faculty of Physicians and Surgeons, 242, St. Vincent-street, Glasgow, C.2, and in the teaching hospitals of Glasgow, from 28TH OCTOBER to 1ST NOVEMBER, 1957.

MONDAY, 28TH OCTOBER, 1957

SYMPOSIUM ON SCHIZOPHRENIA—Chairman, Prof. E. STENGEL, Sheffield

10 A.M.	Physiopathology	Dr. A. C. TAIT
10.30 A.M.	The psychological aspects of phantasticants and the isolation hypothesis	Mr. R. M. MOWBRAY
11 A.M.	Coffee	
11.30 A.M.	The psycho-analytical contribution	Dr. THOMAS FREEMAN
12 NOON	Psychological aspects	Mr. ANDREW MCGHIE
12.30 P.M.	Lunch	
2 P.M.	Clinical diagnosis of early schizophrenia	Dr. HUNTER GILLIES
2.30 P.M.	Psychotherapeutic approach	Dr. I. R. C. BATCHELOR, Dundee
3 P.M.	Tea	
3.30 P.M.	Management and rehabilitation of the chronic schizophrenic patient	Dr. H. B. MILLER, Ayr
4 P.M.	Discussion	

TUESDAY, 29TH OCTOBER, 1957

SYMPOSIUM ON PSYCHOSOMATIC MEDICINE—Chairman. Prof. E. J. WAYNE, Glasgow

10 A.M.	Psychosomatic disorders: Theoretical and Epidemiological	Dr. J. L. HALLIDAY
10.30 A.M.	A biological view of psychosomatic disorders	Mr. S. A. BARNETT, Zoology Department, Glasgow University
11 A.M.	Coffee	
11.30 A.M.	Psychosomatic aspects of pulmonary tuberculosis	Dr. D. M. KISSON
12.30 P.M.	Lunch	
2 P.M.	Psychological aspects of bronchial asthma	Dr. A. B. SCLARE
2.30 P.M.	Tranquillizing drugs in bronchial asthma	Dr. J. A. CROCKETT
3 P.M.	Incidence of physical diseases in mental hospitals	Dr. R. H. PARR
3.30 P.M.	Tea	
4 P.M.	Psychosomatic medicine and the general physician	Dr. S. LAZARUS
4.30 P.M.	Discussion	

WEDNESDAY, 30TH OCTOBER, 1957

SYMPOSIUM ON TRANQUILLIZERS—Chairman, Prof. S. ALSTEAD, Glasgow

9.30 A.M.	Pharmacological psychiatry	Dr. W. MAYER-GROSS, Birmingham
10 A.M.	Pharmacology	Dr. JOHN LEWIS
10.30 A.M.	Coffee	
11 A.M.	Clinical Experience (Neuroses)	Dr. J. R. ROY
11.30 A.M.	Clinical Experience (Psychoses)	Dr. W. A. CRAMOND
12 NOON	Side effects	Dr. A. G. MELROSE

Afternoon.—It is hoped to arrange visits to several psychiatric units; details will be announced at Monday or Tuesday sessions.

THURSDAY, 31ST OCTOBER, 1957

SYMPOSIUM ON RECENT ADVANCES IN MENTAL DEFICIENCY—Chairman, Dr. R. M. STEWART

9.30 A.M.	Biology of mental deficiency	Dr. R. BAILEY, Edinburgh
10 A.M.	Recent developments in the field of mental defect	Dr. R. C. MACGILLIVRAY
11 A.M.	Coffee	
11.30 A.M.	Research in mental deficiency	Dr. BRIAN KIRMAN, London
12 NOON	Discussion	
12.30 P.M.	Lunch	
2 P.M.	The autistic child	Dr. F. H. STONE
3 P.M.	Delinquency and mental defect	Dr. K. R. H. WARDROP
3.30 P.M.	Tea	
4 P.M.	Discussion	
7 P.M. for 7.30 P.M.	Course Dinner (Lounge Suit)	

FRIDAY, 1ST NOVEMBER, 1957

SYMPOSIUM ON GENETICS AND BIOCHEMISTRY—Chairman, Prof. G. PONTECORVO, Glasgow

9.30 A.M.	Hereditary factors and metabolism	Dr. JOHN ROPER
10.30 A.M.	Discussion	
10.45 A.M.	Coffee	
11.15 A.M.	Hereditary metabolic disturbances in mental disease and defect	Prof. L. S. PENROSE, London
12.15 P.M.	Discussion	

There is no fee for the Course. There will be a Course Dinner on Thursday, 31st October, at 7 P.M. for 7.30 P.M. Tickets (inclusive of wine) are £1. It is hoped to arrange visits to mental hospitals and psychiatric clinics on Wednesday afternoon. Further inquiries should be made to the Registrar, Royal Faculty of Physicians and Surgeons, 242, St. Vincent-street, Glasgow, C.2.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS

DIPLOMA IN CHILD HEALTH

The Royal Faculty of Physicians and Surgeons announce that an EXAMINATION for the Diploma in Child Health will begin on FRIDAY, 11TH OCTOBER, 1957, and applications for admission to that examination should be lodged with the Registrar not later than 20th September.

The Regulations and form of application for admission to the examination may be had on application to the Registrar, Royal Faculty of Physicians and Surgeons, 242, St. Vincent-street, Glasgow, C.2.

DAN MASON RESEARCH FOUNDATION. West London HOSPITAL MEDICAL SCHOOL. Applications are invited for the post of DAN MASON RESEARCH FELLOW. The successful candidate, who should hold a higher qualification in medicine or in surgery, will be required to undertake research in problems of gastroenterology. The post will include clinical research at the Hospital and experimental work in the Department of Pharmacology of the Royal College of Surgeons of England. The appointment is for 1 year in the first instance. Salary at the rate of £1000 p.a.

Applications should be sent to the Secretary, West London Hospital Medical School, W.6, by 26th July, 1957.

GUY'S HOSPITAL MEDICAL SCHOOL, S.E.1. Applications are invited for a RESEARCH FELLOWSHIP in the Department of Pathology, to investigate the serological aspects of neoplasms. Opportunities for experience in general pathology and teaching. Salary from £850 p.a. according to experience. Appointment for 1 year in first instance, renewable up to 3 years; duties to begin mid-September.

Apply to the Dean, giving names of 3 referees.

GUY'S HOSPITAL MEDICAL SCHOOL, London Bridge, S.E.1. Applications are invited for the post of LECTURER IN PHARMACOLOGY at Guy's Hospital Medical School for 1 year with duties commencing 1st October, 1957, and at an initial salary of £1100 p.a. plus London allowance with family allowance and superannuation.

Forms of application are obtainable from, and should be lodged with, the Dean, Guy's Hospital Medical School, London Bridge, S.E.1, not later than 2nd August, 1957.

GUY'S HOSPITAL MEDICAL SCHOOL, London Bridge, S.E.1. Applications are invited for the post of JUNIOR LECTURER in the Department of Morbid Anatomy and Histology. Appointment to date from 1st October, 1957. Salary in the scale of £900–£100–£1100 with F.S.S.U. and family allowance. Preference will be given to a candidate with an Honours Degree in a Basic Medical Science.

Forms of application are obtainable from, and should be lodged with, the Dean, not later than 25th July, 1957.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL (UNIVERSITY OF LONDON), Denmark-hill, S.E.5. Applications are invited for the COWBURN RESEARCH FELLOWSHIP tenable in the Medical School. The successful applicant, who need not be medically qualified, will be expected to undertake research on blood coagulation in relation to human disease. The Fellowship will be full-time, tenable for up to 3 years. The stipend will be £1200 a year plus F.S.S.U.

Further particulars may be obtained from the Secretary of the Medical School, to whom applications, giving full particulars of age, qualifications and experience, together with the names of 3 referees, should be sent before Saturday, 14th September, 1957.

THE UNIVERSITY OF MANCHESTER. Darbishire HOUSE HEALTH CENTRE. Applications are invited for the appointment of ASSISTANT GENERAL PRACTITIONER at the Darbishire House Health Centre in Upper Brook-street and High-street, Manchester, for a period of 12 months beginning 1st October, 1957. The work entails assisting the 4 General Practitioners in the Centre in which about 12,000 patients are at present registered. The Health Centre is also used in the teaching of Medical Students of the University. Salary at the rate of £1000 p.a., with an allowance towards the cost of travelling expenses and superannuation.

Applications, which should include full particulars of qualifications and experience, must reach the Registrar, the University, Manchester, 13, not later than 7th August, 1957, and should give the names of not more than 3 persons to whom reference may be made.

UNIVERSITY OF ST. ANDREWS. Queen's College, DUNDEE. ASSISTANTSHIP IN PATHOLOGY. Applications are invited for the post of Assistant in the Department of Pathology, Queen's College, Dundee. Salary £900–£100–£1100 p.a. F.S.S.U. and family allowance benefits. The appointment will be for 3 years, renewable in special circumstances for a fourth and final year for which the salary will be £1200.

Applications (6 copies), containing the names of 3 referees, to the undersigned not later than 9th August, 1957.

PATRICK CUMMING, Joint Clerk to the University Court.

July, 1957.

UNIVERSITY COLLEGE, Ibadan, Nigeria. Applications are invited for SENIOR LECTURESHIP IN OPHTHALMOLOGY. Salary scale £1850–£100–£2450 p.a. Successful candidate will be offered Honorary Consultant appointment by Board of Management of University College Hospital. Appointment, initially for 3 years, to be assumed as soon after 1st October as possible. Allowance for up to 3 children, £50 p.a. each if resident in Nigeria, £100 p.a. each if resident elsewhere. Part furnished accommodation at rent up to 7·7% of salary. Passages paid for member of staff, wife and up to 3 children below age of 11 years on appointment, annual overseas leave and termination. F.S.S.U. Outfit allowance £60.

Detailed applications (10 copies), naming 3 referees, to be received by 19th August, 1957, by Secretary, Senate Committee on Colleges Overseas in Special Relation, University of London, Senate House, London, W.C.1, from whom further particulars may be obtained.

UNIVERSITY OF SOUTHAMPTON. Applications are invited for the post of LECTURER or ASSISTANT LECTURER IN BIOCHEMISTRY in the Department of Physiology and Biochemistry. Salary scale £900–£50–£1350–£75–£1650 for Lecturer and £700–£50–£850 for Assistant Lecturer, with placing on scale according to qualifications and experience. F.S.S.U. and children's allowances. Higher degree in biochemistry or physiology essential.

Further particulars should be obtained from the Secretary and Registrar, to whom applications (6 copies) should be sent not later than 7th September, 1957.

THE UNIVERSITY OF SHEFFIELD. Applications are invited for the JOHN STOKES RESEARCH FELLOWSHIP. The value of the Fellowship is £500 a year and it is normally tenable for 3 years, which may be extended by a further 2 years or less. It is a full-time appointment. The Fellow is required to carry out, in 1 of the departments of Sheffield University Medical School or in a teaching hospital associated with the Medical School, original research work in some branch of medical science approved by the advisory committee. A candidate need not hold a registrable medical qualification.

Applications (8 copies), indicating the line of research proposed by the applicant, and including the names and addresses of 3 referees, and, if desired, copies of not more than 3 testimonials, should reach the Registrar, The University, Sheffield, 10, by 3rd August, 1957.

THE QUEEN'S UNIVERSITY OF BELFAST. The Senate of The Queen's University of Belfast invites applications for a LECTURESHIP IN ANÆSTHETICS from 1st January, 1958, or such other date as may be arranged. Salary scale £2550–£100–£2900 with provisions for superannuation. Appointment on this scale will depend on the qualifications and experience of the successful candidate.

Applications should be submitted by 5th September, 1957. Further particulars from G. R. COWIE, M.A., LL.B., Secretary.

AUSTRALIA. UNIVERSITY OF QUEENSLAND. Applications are invited for the position of SENIOR LECTURER (CLINICAL) IN TROPICAL MEDICINE. The applicant should have a higher qualification in clinical medicine; in addition he should have a higher qualification in tropical medicine or have had special experience in tropical medicine. Previous experience in medical research is desirable but not absolutely essential. Duties will include responsibility for directing the University course in tropical medicine and also consultant care of patients, who may or may not be suffering from tropical diseases, in the wards and Outpatients Department of the Brisbane Hospital. Salary is £A2160–£A2460 p.a.

Further particulars are obtainable from the Secretary, Association of Universities of the British Commonwealth, 36, Gordon-square, London, W.C.1. Applications close in Australia and London on 30th September, 1957.

Hospital Services : Senior Appointments

NORTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD.

Maximum Part-time CONSULTANT RADIOLOGIST to Tottenham Group of hospitals based on St. Ann's General Hospital, N.15. Person appointed to live within easy reach of Hospital. Further particulars on application.

Part-time CONSULTANT SURGEON to Poplar Hospital, East India Dock-road, E.14, for 3 sessions a week. Post available 25th November, 1957. Further particulars on application.

Part-time ASSISTANT OPHTHALMOLOGIST (Senior Hospital Medical Officer grade) for 3 sessions a week at Southbury Clinic, Glyn-road, Enfield.

Applications (6 copies), and names of 3 referees, should reach the Secretary, 11A, Portland-place, London, W.1, by Saturday, 17th August.

ROYAL FREE HOSPITAL. Applications are invited from registered medical practitioners for the appointment of Part-time ASSISTANT SURGEON (Consultant) to the Royal Free Hospital, Gray's Inn-road, W.C.1. Applicants must be Fellows of the Royal College of Surgeons (England). Salary and conditions of service in accordance with those laid down by the Ministry of Health.

Applications, giving details of experience and accompanied by the names of 3 referees, should be sent to the Secretary to the Board of Governors, Royal Free Hospital, Gray's Inn-road, W.C.1, not later than 17th August, 1957.

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for an appointment as Part-time CONSULTANT PHYSICIAN (6 notional half-days a week) to the Lewisham Group of hospitals. If a candidate wishing to do research is appointed, facilities will be made available for the purpose. The Medical Research Council have indicated their willingness to consider an application from the successful candidates for the support of a specific research programme. Candidates must have had wide experience in general medicine and be members of a Royal College of Physicians. Possession of a higher degree in medicine is desirable. The appointment will be in accordance with the terms and conditions of service of hospital medical and dental staffs (England and Wales). Candidates may visit the hospitals concerned.

Apply, stating nationality, age, sex, qualifications and experience, including details of present appointment and of war service, together with the names and addresses of 3 referees, to the Secretary, Advisory Appointments Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, W.1, not later than 3rd August, 1957.

WELSH REGIONAL HOSPITAL BOARD. Whole-time Locum Tenens CONSULTANT DERMATOLOGIST required Caernarvon and Anglesey and Clwyd and Deeside Hospital Management Committee areas for a period of approximately 2 months.

Applications, naming 2 referees, to Senior Administrative Medical Officer, Temple of Peace, Cathays Park, Cardiff.

BIRMINGHAM REGIONAL HOSPITAL BOARD. Part-time CONSULTANT RADIOLOGIST (9 notional half-days weekly). Duties at Royal (1 notional half-day) and New Cross (2 notional half-days) Hospitals, Wolverhampton; Hallam (3 notional half-days) and West Bromwich and District General (3 notional half-days) Hospitals, and other group hospitals. Wide experience specialty/higher qualification required.

Applications (15 copies), stating name, age, nationality, present and previous appointments and details of 3 referees, to Secretary, 10, Augustus-road, Birmingham, 15, by 19th August, 1957.

BRIGHTON AND LEWES AND WORTHING GROUPS HOSPITAL MANAGEMENT COMMITTEES. Applications are invited for a Locum VENEREOLOGIST for a total of 8 sessions per week from 6th August to 2nd September, 1957.

Further information can be obtained from the Group Secretary, Brighton and Lewes Hospital Management Committee, Royal Sussex County Hospital, Eastern-road, Brighton (Tel. No. Brighton 29155), to whom applications for the post should be sent immediately.

LEEDS REGIONAL HOSPITAL BOARD. Whole-time ASSISTANT PSYCHIATRIST (Senior Hospital Medical Officer scale) for duties at De la Pole Hospital, Willerby, near Hull (1100 Beds). Residential accommodation available if required.

Applications (12 copies), stating age, qualifications and details of appointments held with dates, together with the names and addresses of 3 referees, to the Secretary, Park-parade, Harrogate, by 9th August, 1957.

REVISED ADVERTISEMENT

LEEDS REGIONAL HOSPITAL BOARD. Part-time CONSULTANT in Paediatrics (9 notional half-days per week) for duties at hospitals in the Dewsbury, Batley and Mirfield Group with additional duties as may be required at hospitals in the Pontefract, Wakefield, Huddersfield and Halifax Areas. Duties also required at the School Clinic, Dewsbury. The person appointed will be required to reside in Dewsbury or within such a distance thereof as may be laid down by the Board.

Applications (12 copies), stating age, qualifications and details of present and previous appointments with dates, together with the names and addresses of 3 referees, to the Secretary to the Board, Park-parade, Harrogate, by 9th August, 1957.

LIVERPOOL REGIONAL HOSPITAL BOARD. Applications are invited for the post of Whole-time ASSISTANT ANÆSTHETIST (Senior Hospital Medical Officer) with duties in the North Liverpool, Liverpool and District Eastern and Liverpool Region Children's Groups. Candidates should have considerable experience in anæsthesia and should be Fellows of the Faculty of Anæsthetists.

Forms of application from Dr. T. Lloyd Hughes, Senior Administrative Medical Officer, Liverpool Regional Hospital Board, 19, James-street, Liverpool, 2, to be returned not later than 10th August, 1957.

VINCENT COLLINGE, Secretary to the Board.

LIVERPOOL REGIONAL HOSPITAL BOARD. Rainhill HOSPITAL. Applications are invited for the post of Whole-time CONSULTANT PSYCHIATRIST AND DEPUTY MEDICAL SUPERINTENDENT (resident) with duties at the above Hospital. Applicants should possess the D.P.M., and have had at least 7 years approved psychiatric experience including practical knowledge of outpatient work. Possession of a higher qualification in general medicine will be considered an advantage.

Forms of application from Dr. T. Lloyd Hughes, Senior Administrative Medical Officer, Liverpool Regional Hospital Board, 19, James-street, Liverpool, 2, to be returned not later than 10th August, 1957.

VINCENT COLLINGE, Secretary to the Board.

NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD.

(1) ASSISTANT PSYCHIATRIST (whole-time), Senior Hospital Medical Officer grade, St. Bernard's Hospital, Southall, Middlesex (2507 Beds). Considerable experience in diagnosis and treatment of mental illness essential.

Applications before 21st August, 1957.

(2) CONSULTANT ANÆSTHETIST (4 half-days a week), Thoracic Surgical Unit, Clare Hall Hospital, South Mimms, Barnet, Herts. Applications for 2 half-days a week will be considered and candidates should indicate whether they are able to undertake 2 or 4 half-days.

Applications before 23rd August, 1957.

(3) CONSULTANT PSYCHIATRIST, 2 half-days per week for work with parents at "High Wick" Tyttenhanger, St. Albans, Herts. (Approximately 20 Beds for psychotic and maladjusted children 3–10 years old.) Preference will be given to suitably qualified Male candidate with interest in research.

Applications before 28th August, 1957.

Hospitals and Unit may be visited by direct appointment.

Application forms obtainable from, and returnable to, Secretary, North West Metropolitan Regional Hospital Board, 11A, Portland-place, W.1.

SCOTLAND. NORTH-EASTERN REGIONAL HOSPITAL BOARD, ABERDEEN GENERAL HOSPITALS. Applications are invited for the post of DEPUTY GROUP MEDICAL SUPERINTENDENT of the Aberdeen General Hospitals. The Group includes the Aberdeen Royal Infirmary and Woodend General Hospital, and the duties of the Deputy embrace the day-to-day medical administration of Woodend Hospital. Extensive experience in hospital administration is not essential. The inclusive salary for the appointment will be within the scale £1250–£1450 p.a. subject to superannuation deductions at the rate of 6%.

Applications, stating age, qualifications and experience, and giving the names of 3 referees to whom reference may be made, should be lodged by 16th August, 1957, with the Secretary, North-Eastern Regional Hospital Board, P.O. Box No. 28, 1, Albyn-place, Aberdeen, from whom a copy of the conditions of appointment may be obtained.

MANCHESTER REGIONAL HOSPITAL BOARD invites applications for the post of Locum SENIOR HOSPITAL MEDICAL OFFICER in Pathology to the South Manchester Hospital Management Committee for 9 weeks, commencing October, 1957, or a Locum REGISTRAR in Pathology for 12 weeks commencing October, 1957. Duties divided between Withington Hospital Laboratory and Wythenshawe Laboratory, and would include all branches of clinical pathology except biochemistry.

Applications, with the names of 2 referees, to be forwarded to the Group Secretary, Withington Hospital, Manchester, 20.

NEWCASTLE REGIONAL HOSPITAL BOARD.

CONSULTANT OPHTHALMOLOGIST (whole-time or part-time for minimum of 9 notional half-days per week) for Darlington, Northallerton and South West Durham Groups of hospitals—main hospitals, Darlington Memorial (304 Beds); Friarage (341 Beds); and Bishop Auckland General (365 Beds). Appointee will be required to undertake certain school clinic duties at associated hospital clinics. Further particulars may be had on application.

CONSULTANT PATHOLOGIST (whole-time or part-time for minimum of 9 notional half-days per week) for Newcastle upon Tyne Group of hospitals—main hospital, Newcastle General (848 Beds). A large new Institute of Pathology includes a hospital laboratory, a M.R.C. laboratory and the Regional Blood Transfusion Centre. The pathology staff also cover the needs of a nearby mental hospital of 1170 Beds. It is hoped that the person appointed will have had special experience in biochemistry. Further particulars from Senior Pathologist, General Hospital, Westgate-road, Newcastle upon Tyne, 4.

Applications, with names and addresses of 3 referees, to Senior Administrative Medical Officer, Regional Hospital Board, Benfield-road, Newcastle upon Tyne, 6, within 28 days.

NEW ZEALAND. THE OTAGO HOSPITAL BOARD, DUNEDIN, NEW ZEALAND. Applications are invited from persons who have held a medical degree for at least 5 years, for the position of ASSISTANT RADIOTHERAPIST with the Otago Hospital Board.

The salary scale payable will be in accordance with the appointee's qualifications and experience and will be either :—

(*a*) Junior Specialist's scale : £1640–£1940 p.a., or

(*b*) Senior Specialist's scale : £2040–£2340 p.a.

The commencing rate within the applicable scale will be that determined by the Department of Health's Medical Officers' Salaries Grading Committee in accordance with the experience, qualifications and status of the appointee.

The position is non-resident, is full-time and private practice is not permitted. Conditions of appointment may be obtained on application to the High Commissioner for New Zealand, 415, Strand, London, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2, or the undersigned. Travelling expenses in accordance with those stated in the conditions of appointment are payable where the appointee signs an agreement to remain in the service of the Board for a period of 2 years.

Applications, stating age, qualifications and experience, together with testimonials and Health and Radiological Certificates are to be in the hands of the undersigned by 10 A.M. on Friday, 18th October, 1957.

W. A. WILLIAMSON, Secretary, Otago Hospital Board.

P.O. Box 946, Dunedin, New Zealand.

SOUTH AFRICA. PROVINCIAL ADMINISTRATION OF THE CAPE OF GOOD HOPE. UNIVERSITY OF CAPE TOWN. Joint Medical Staff for Groote Schuur and other Teaching Hospitals. Vacancy. Applications are invited from registered medical practitioners for appointment to the following vacant post at the Groote Schuur Hospital, Observatory, Cape Town:—

DEPARTMENT OF RADIO-DIAGNOSIS

MEDICAL PRACTITIONER (Grade C), with salary at the rate of £1380 p.a. (fixed).

In addition to the basic salary, a non-pensionable cost-of-living allowance at rates prescribed from time to time by the Administrator (at present amounting to £234 p.a.) is payable to certain whole-time married officials and employees.

The conditions of service are governed by the relevant Ordinances and Regulations as well as the agreement entered into between the Cape Provincial Administration and the University of Cape Town.

The Joint Medical Staff is required to serve jointly the Provincial Administration and the University of Cape Town.

The successful candidate must have not less than 5 years' experience after graduation or 4 years' experience after registration, of which not less than 3 years shall have been spent in training as a Specialist in Radio-diagnosis.

Candidates are requested to furnish particulars in regard to the following :—

(*a*) Academic achievements (degrees and diplomas held and the standard of achievement in professional examinations, scholarships, and special awards).

(*b*) Professional experience (not only a statement of employer but the institution in which the individual worked and the type of work undertaken).

(*c*) Names of 3 referees (1 of these should preferably be someone occupied in the same branch of medicine as the candidate), or to approach their referees to submit confidential reports to the Director of Hospital services before the closing date for the receipt of applications.

Application must be made in duplicate on the prescribed form, Staff 23, which is obtainable from the office of the High Commissioner for the Union of South Africa, South Africa House, Trafalgar-square, London. Details as regards conditions of service and transport facilities can also be obtained at the office of the High Commissioner.

The completed application forms must be addressed to the Director of Hospital Services, P.O. Box 2060, Cape Town, South Africa, and must reach him not later than 27th July, 1957.

Candidates must state the earliest date on which they can assume duty.

AUSTRALIA. ROYAL SOUTH SYDNEY HOSPITAL, Joynton-avenue, ZETLAND, SYDNEY, NEW SOUTH WALES, AUSTRALIA. (Acute Hospital of 100 Beds.) Applications are invited from registered medical practitioners for the position of MEDICAL SUPERINTENDENT at the above Hospital, situated in a large industrial area. Total attendances Casualty and Outpatient Departments—61,000 per year. Accommodation available at the Hospital for a single man. Salary in accordance with determination approved by the Hospitals Commission of N.S.W., at present, £A2014 p.a., less £188 a year for board and residence.

Applications endorsed "Medical Superintendent," stating age, qualifications, experience, nationality and marital status together with copies of 3 testimonials, to be forwarded to reach the undersigned not later than 1st October, 1957. The successful applicant will be required to commence duties during January, 1958.

R. T. WRIGHT, Secretary and Chief Executive Officer.

Hospital Services : Junior Appointments

BETHLEM ROYAL HOSPITAL AND THE MAUDSLEY HOSPITAL. Applications are invited from registered medical practitioners for the appointment of REGISTRAR for the period from 1st October, 1957 to 7th October, 1958, at the above Postgraduate Teaching Hospital, with which is associated the Institute of Psychiatry (University of London). Candidates with experience in general medicine and neurology or in psychology will receive special consideration.

Applications, giving details of experience and the names of 2 referees, should be made within 1 week of the appearance of this advertisement. Application forms obtainable from K. J. JOHNSON, House Governor and Secretary, Maudsley Hospital, Denmark-hill, London, S.E.5.

BETHLEM ROYAL HOSPITAL AND THE MAUDSLEY HOSPITAL. Applications are invited from registered medical practitioners for the appointment of SENIOR HOUSE OFFICER for the period from 1st October, 1957 to 7th October, 1958, at the above Postgraduate Teaching Hospital, with which is associated the Institute of Psychiatry (University of London). Experience in general medicine and neurology or in the basic sciences is an advantage.

Applications, giving details of experience and the names of 2 referees, should be made within 1 week of the appearance of this advertisement. Application forms obtainable from K. J. JOHNSON, House Governor and Secretary, Maudsley Hospital, Denmark-hill, S.E.5.

BETHNAL GREEN HOSPITAL, Cambridge Heath-road, London, E.2. Applications are invited for the pre-registration post of HOUSE PHYSICIAN, vacant 14th August, 1957.

Applications, stating experience, together with copies of 2 recent testimonials, to Hospital Secretary as soon as possible.

CENTRAL MIDDLESEX HOSPITAL, Park Royal, N.W.10. SENIOR HOUSE OFFICER in General Medical Department with duties mainly in Geriatric Department. Good facilities for higher examination and insight into working of general practice. Whole-time appointment for 6 months in first instance.

Applications, with 2 testimonials, or names of 2 referees, to Medical Director by 27th July.

CENTRAL MIDDLESEX HOSPITAL, Park Royal, N.W.10. NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. REGISTRAR (whole-time) required in General Medical and Cardiological Department of above Hospital. Experience in chest and heart diseases desirable. Opportunity for research work. Resident when on duty. Appointment for 1 year, renewable. Hospital may be visited by direct appointment.

Application forms obtainable from, and returnable to, Secretary, Central Middlesex Group Hospital Management Committee, Park Royal, N.W.10, by 3rd August.

CHARING CROSS HOSPITAL, W.C.2. Whole-time REGISTRAR in the Radiotherapy Department. The appointment, which is renewable, will be for 1 year in the first instance. Possession of a Diploma in Radiotherapy or other higher degrees is desirable, but facilities for further studies will be given if examinations have not been completed.

Applications, on forms obtainable from the undersigned, to be returned by 5th August, 1957.

FRANK HART, Secretary to the Board.

CONNAUGHT HOSPITAL, Walthamstow, E.17. (123 Beds.) HOUSE PHYSICIAN required for a period of 6 months. Post vacant 1st September, 1957.

Applications, with full details and copies of 2 recent testimonials, should be sent immediately to the Secretary, Hospital Management Committee, Forest Group, Langthorne-road, E.11.

CONNAUGHT HOSPITAL, Walthamstow, E.17. (118 Beds.) Applications are invited for the post of SECOND CASUALTY OFFICER with duties in the Department of Orthopædic and Traumatic Surgery (Senior House Officer grade). Recognised for F.R.C.S. Salary £819 10s. p.a., less £150 p.a. for board, lodging, &c.

Applications, with full details and copies of 2 recent testimonials, should be sent immediately to Secretary, Hospital Management Committee, Forest Group, Langthorne-road, E.11.

FOREST GATE HOSPITAL, Forest-lane, E.7. Pre-registration OBSTETRIC HOUSE OFFICER (second post) required for 6 months commencing 1st September, 1957. The appointment is recognised for training candidates for D.Obst. R.C.O.G.

Applications, with names of 2 referees, to Hospital Secretary by 27th July, 1957.

GUY'S HOSPITAL, S.E.1. Applications are invited for the post of SENIOR REGISTRAR in Psychological Medicine at Guy's Hospital for 1 year, with duties commencing 1st October, 1957.

Forms of application are obtainable from, and should be lodged with, the Superintendent, Guy's Hospital, London Bridge, S.E.1, not later than 2nd August, 1957.

GUY'S HOSPITAL, S.E.1. Applications are invited for the post of REGISTRAR in Orthopædics (mid-grade) at Guy's Hospital for 1 year, with duties commencing 1st October, 1957. Preference will be given to applicants holding the F.R.C.S.

Forms of application are obtainable from, and should be lodged with, the Superintendent, Guy's Hospital, London Bridge, S.E.1, not later than 2nd August, 1957.

GUY'S HOSPITAL, S.E.1. Applications are invited for the following posts :—

(i) RESIDENT ANÆSTHETIST at Guy's Hospital (post-registration).

(ii) RESIDENT ANÆSTHETIST (Senior House Officer) at the Guy's Unit at New Cross Hospital.

Duties in each case to commence on 1st August, 1957.

Applications, with copies of 2 recent testimonials, should be lodged with the Superintendent, Guy's Hospital, London Bridge, S.E.1, on or before 27th July, 1957.

ELIZABETH GARRETT ANDERSON HOSPITAL, Euston-road, N.W.1. (ROYAL FREE HOSPITAL GROUP.) Applications are invited from pre-registration and registered Women medical practitioners for the post of OBSTETRIC HOUSE SURGEON (recognised for the M.R.C.O.G.). Duties to commence 1st September, 1957. Appointment for 6 months. Salary in accordance with Ministry of Health scale for House Officers.

Applications, with copies of 3 recent testimonials, to be sent to the Secretary, Elizabeth Garrett Anderson Hospital, by 31st July, 1957.

ELIZABETH GARRETT ANDERSON HOSPITAL, Euston-road, N.W.1. (ROYAL FREE HOSPITAL GROUP.) Applications are invited from registered Women medical practitioners for the post of Full-time REGISTRAR in Pathology (non-resident). Appointment for 1 year in the first instance to commence 1st October, 1957. Salary in accordance with Ministry of Health scale for Registrars.

Applications, with names of 3 referees, should be sent to the Secretary, Elizabeth Garrett Anderson Hospital, Euston-road, N.W.1, by 31st July.

HACKNEY HOSPITAL, London, E.9. (General—841 Beds.) Applications for the 6-months resident appointment of Pre-registration HOUSE SURGEON (now vacant—recognised for F.R.C.S.) should reach the Secretary, above address, by 29th July, quoting HH/PHS.

HAMPSTEAD GENERAL HOSPITAL. (Royal Free HOSPITAL GROUP.) Applications are invited from registered medical practitioners (Men or Women) for the post of Whole-time NON-RESIDENT SENIOR REGISTRAR in Clinical Pathology at the Hampstead General Hospital. Appointment for 1 year in the first instance, from 1st September, 1957. Experience in clinical pathology is essential, and in addition special interest in bio-chemistry would be an advantage.

Formal applications, stating age, qualifications and experience, together with the names of 3 referees, should be sent to the Secretary, Hampstead General Hospital, Haverstock Hill, N.W.3, not later than 7th August, 1957.

HAMPSTEAD GENERAL HOSPITAL, Haverstock Hill, N.W.3. (ROYAL FREE HOSPITAL GROUP.) Applications are invited from registered medical practitioners for the post of RESIDENT CASUALTY OFFICER (graded as Senior House Officer). Salary £819 10s. p.a. Vacant 1st September, 1957, tenable for a period of 6 months at the Main Outpatients Department, Bayham-street, N.W.1.

Application forms may be obtained from the Secretary, to whom they should be returned together with copies of 3 recent testimonials, by 31st July, 1957.

HENDON ISOLATION HOSPITAL, Goldsmith-avenue, London, N.W.9. (92 infectious diseases beds and 20 gynæcological beds.) JUNIOR HOSPITAL MEDICAL OFFICER required at above Hospital. Previous similar experience essential. Post vacant 3rd September, 1957.

Apply, stating age, nationality, qualifications and details of experience, together with the names and addresses of 2 referees, to Group Secretary, Edgware General Hospital, Edgware, Middlesex, by 3rd August, 1957.

HIGHLANDS GENERAL HOSPITAL, Winchmore Hill, N.21. HOUSE SURGEON required, vacant 4th August. Duties mainly orthopædic with some E.N.T. and emergency general surgery. New Operating Theatre, Outpatient and Casualty Department. Post recognised for Pre-registration Service.

Applications, with copies of 3 testimonials and name and address of 1 referee, to Hospital Secretary.

HOSPITAL OF ST. JOHN AND ST. ELIZABETH, 60, Grove End-road, London, N.W.8. Required to commence on Wednesday, 14th August, Full-time SURGICAL REGISTRAR (Male). The possession of the Diploma of Fellow of 1 of the Royal Colleges is desirable. Honorarium at the rate of £850 p.a. Appointment will be for a period of 12 months.

Further particulars may be obtained from the Secretary to whom applications, with names of 3 referees, should be sent on or before Wednesday, 31st July, 1957.

AMENDED ADVERTISEMENT

KING'S COLLEGE HOSPITAL, Denmark-hill, S.E.5. Applications are invited for the post of Locum SENIOR REGISTRAR to the Department of Neurology (Dr. Macdonald Critchley and Dr. S. Nevin). The post is tenable immediately until 31st December, 1957.

Applications, together with the names of 2 referees, should be submitted to the undersigned not later than 3rd August, 1957.

S. W. BARNES, House Governor.

LAMBETH HOSPITAL, Brook-drive, S.E.11. Applications are invited for appointment as CASUALTY OFFICER, vacant 9th September, 1957. Post graded Senior House Officer and recognised for F.R.C.S. Successful candidate will be required to do locum duties from 26th August, 1957.

Forms of application from Acting Physician-Superintendent. Stamped addressed envelope should be enclosed.

METROPOLITAN HOSPITAL, Kingsland-road, London, E.8. REGISTRAR in General Surgery required for locum duties, for approximately 12 months. Resident or non-resident. Possession of F.R.C.S. desirable.

Applications, stating age, nationality, qualifications and experience, together with copies of 3 testimonials, to the Hospital Secretary by 3rd August, 1957.

MIDDLESEX HOSPITAL, W.1. Applications invited for post of ASSISTANT in the Department of Cardiology with status of Senior Medical Registrar. Appointment will also involve duties in the Thoracic Surgical Unit. Previous cardiological training essential.

Forms of application obtainable from the Deputy Superintendent should be returned, naming 2 referees, by 10th August.

MIDDLESEX HOSPITAL, W.1. Applications invited from candidates reading for the D.M.R.D. for the post of SENIOR HOUSE OFFICER in the Department of X-ray Diagnosis. Preference will be given to candidates with a higher degree.

Forms of application obtainable from the Deputy Superintendent should be returned, naming 2 referees, by 31st August.

MIDDLESEX HOSPITAL, W.1. Applications invited for post of REGISTRAR in the Department of Radiotherapy.

Forms of application obtainable from Deputy Superintendent, should be returned, naming 2 referees, by 31st August.

MILDMAY MISSION HOSPITAL, Austin-street, London, E.2. Applications are invited for the pre-registration post of RESIDENT HOUSE SURGEON (post recognised for F.R.C.S.), vacant on 31st July, 1957. Candidates should be in sympathy with the evangelical Christian aims of the Hospital.

Applications and references to be addressed to the Medical Superintendent as soon as possible.

NATIONAL HOSPITALS FOR NERVOUS DISEASES. Applications are invited from registered medical practitioners for the appointment of ANÆSTHETIC REGISTRAR (non-resident) at The National Hospital, Queen-square, W.C.1. This post carries the grade of Senior Registrar. The appointment will be for a period of 1 year in the first instance.

Applications, giving the names of 3 referees, to be sent to the undersigned not later than 31st August, 1957.

H. EWART MITCHELL,
Secretary to the Board of Governors.

The National Hospital, Queen-square, W.C.1.

NATIONAL HOSPITALS FOR NERVOUS DISEASES. Applications are invited for the full-time appointment of SENIOR MEDICAL REGISTRAR (non-resident) at the Maida Vale Hospital for Nervous Diseases, London, W.9, which is a joint appointment with The London Hospital. The successful applicant will work for the first and third years at the Maida Vale Hospital and the second and fourth years at The London Hospital in the Neurological Department. Senior Registrar grade. Preference will be given to the candidate holding a higher degree who intends to specialise in neurology.

Applications, with copies of 3 recent testimonials, to be sent to the Secretary to the Board of Governors at the Maida Vale Hospital for Nervous Diseases, London, W.9, not later than 3rd August, 1957.

NORTH MIDDLESEX HOSPITAL, Edmonton, N.18. 2 RESIDENT HOUSE PHYSICIANS required for 1st September for 6 months. General medicine. Approved as pre-registration posts (first or second).

Applications (in own handwriting), stating age, nationality, qualifications, experience, with copies of recent testimonials, to Secretary of Hospital, by 30th July.

PRINCESS BEATRICE HOSPITAL, Earls Court, London, S.W.5. Applications are invited from medical practitioners for the post of CASUALTY OFFICER (some anæsthetic duties). Senior House Officer grade recognised for F.R.C.S. Opportunity to serve for a further 6 months as House Physician in same grade.

Applications, with 3 testimonials, to the House Governor, not later than 23rd July, 1957.

PRINCESS BEATRICE HOSPITAL, Old Brompton-road, Earls Court, S.W.5. Locum Tenens SURGICAL REGISTRAR required from 27th July for above Hospital.

Apply House Governor.

QUEEN MARY'S HOSPITAL FOR THE EAST END, Stratford, E.15. JUNIOR CASUALTY OFFICER (House Officer third post) required for 6 months commencing as soon as possible.

Applications, with the names of 3 referees, to Hospital Secretary by 24th July, 1957.

ROYAL COLLEGE OF SURGEONS AND ST. JAMES' HOSPITAL, Balham. Applications are invited for a 2-year appointment of REGISTRAR in Pathology (commencing 1st October) who will work the first year at St. James' Hospital (resident or non-resident) and the second in the Department of Pathology at the Royal College of Surgeons of England.

Further particulars and application forms, which must be completed and returned by 6th August, from Group Secretary, St. James' Hospital, Balham, S.W.12. (0367.)

ROYAL NATIONAL THROAT, NOSE AND EAR HOS-PITAL, AND INSTITUTE OF LARYNGOLOGY AND OTOLOGY, Gray's Inn-road, W.C.1, and Golden-square, W.1. Applications are invited for a post of SENIOR REGISTRAR from a date to be arranged. The appointment will be for an initial period of 1 year, subject to annual re-election thereafter up to the maximum permissible term in this grade and otherwise in accordance with the terms and conditions of service in the National Health Service. Applicants must have had considerable experience in general surgery and in this specialty and hold a higher surgical qualification.

Applications should give full information as to qualifications and experience, and the names of 2 referees, and should be sent in duplicate to the House Governor before 16th August.

ROYAL FREE HOSPITAL GROUP. Applications are invited for the appointment of SENIOR REGISTRAR to the Pædiatric Department for work at the Royal Free Hospital and the Hampstead General Hospital. Applicants must be registered medical practitioners of not more than 10 years qualification, and be members of the Royal College of Physicians. The appointment is full-time, non-resident and for 1 year in the first instance. Duties to commence 1st October, 1957. Salary and conditions of service in accordance with those laid down by the Ministry of Health for Senior Registrars.

Applications, giving the names of 3 referees, should be sent to the Hospital Secretary, Royal Free Hospital, Gray's Inn-road, W.C.1, not later than 31st August, 1957.

SOUTH-EAST REGIONAL THORACIC SURGERY UNIT. (50 Beds.) BROOK GENERAL HOSPITAL, Shooters Hill-road, S.E.18. SENIOR HOUSE OFFICER, vacant 1st August. Recognised for F.R.C.S. 6 months appointment and may then be renewed for a further period. The Unit treats all types of chest diseases and offers opportunity for comprehensive training in thoracic surgery.

Apply to Group Secretary, Memorial Hospital, Woolwich, S.E.18.

ST. ANDREW'S HOSPITAL, Devons-road, Bow, E.3. HOUSE SURGEONS (2). Recognised pre-registration appointments, commencing 1st and 2nd September, 1957.

Applications, with copy of at least 1 testimonial, should be sent to Hospital Secretary immediately.

ST. CHARLES' HOSPITAL, Ladbroke-grove, W.10. (576 Beds.) HOUSE PHYSICIAN required for pædiatrics, geriatrics and general medical wards—not pre-registration.

Applications, stating age, qualifications, experience, together with the names and addresses of 2 referees, to be sent to the Hospital Secretary immediately.

ST. GEORGE'S HOSPITAL, S.W.1. Applications are invited for the post of RESIDENT ASSISTANT CLINICAL PATHOLOGIST, in the grade of Senior House Officer. Previous experience in laboratory work is not essential, but applicants should have held a clinical appointment. The successful candidate will be required to be resident alternately at St. George's Hospital, Hyde Park Corner, and at the Grove Hospital, Tooting, a branch of St. George's Hospital, and will be required to take up duty on 17th September, 1957.

Applications, stating age, education, qualifications, experience and the names of 2 referees, should reach the undersigned not later than 3rd August, 1957.

P. H. CONSTABLE, House Governor.

ST. JAMES' HOSPITAL, Balham, S.W.12. (Recognised for D.Path.) SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. SENIOR REGISTRAR with wide experience in pathology. Post vacant 1st October.

Application forms obtainable from Group Secretary, Wandsworth Hospital Group, at above address to be completed and returned by 3rd August. (0364.)

ST. MARY'S HOSPITAL, Paddington, W.2. Applications are invited for the post of NON-RESIDENT ORTHOPÆDIC REGISTRAR AND CASUALTY SURGICAL OFFICER graded Registrar, the F.R.C.S. qualification is desirable. The appointment is for a first period of 12 months, the holder normally being eligible for re-election. The successful candidate will be required to take up his duties as soon as possible and to work half-time in the Casualty Department and half-time on the Orthopædic Firm.

Applications, stating nationality, date of birth, permanent address, qualifications with dates, details and National Health Service gradings of previous and present appointments, together with the names and addresses of 3 referees, should reach ALAN POWDITCH, House Governor, not later than 7th August, 1957.

ST. PETER'S, ST. PAUL'S AND ST. PHILIP'S HOSPITALS. RESIDENT SURGICAL OFFICER (Senior Registrar grade), required for St. Peter's Hospital on 1st October, 1957. Applications invited from Male candidates on the British register who have completed their training in general surgery. Appointment for 6 months, with opportunity for a further 6 months if recommended. Candidates should be prepared to spend 1 year at the Hospital if required.

Applications (12 copies), and the names of 3 referees, should reach the House Governor, St. Peter's Hospital, Henrietta-street, W.C.2, by 7th September, 1957.

ST. STEPHEN'S HOSPITAL, Chelsea, S.W.10. Pædiatric HOUSE PHYSICIAN (resident), vacancy 7th August, 1957.

Applications, naming 2 referees, to Medical Superintendent within 14 days.

TOOTING BEC HOSPITAL, Tooting Bec-road, S.W.17. (Mental hospital, over 2000 Beds.) Temporary JUNIOR HOSPITAL MEDICAL OFFICER (resident or non-resident) required to commence duty 30th September, 1957. The Hospital is within easy access of teaching centres in London. Offers good opportunities for study for higher qualifications.

Applications, with names of 2 referees, to be sent to the Physician-Superintendent within 2 weeks of the appearance of this advertisement.

WHITTINGTON HOSPITAL, London, N.19. Locum Tenens SENIOR HOUSE OFFICER (resident) required for E.N.T. Department from 29th July, 1957 to 10th August, 1957. Write or call, Medical Superintendent (ARC. 3070 Ext. 440).

WEST HAM GROUP HOSPITAL MANAGEMENT COMMITTEE, Stratford, E.15. ANÆSTHETIST (Resident Senior House Officer grade) for 12 months commencing 11th August, 1957. 6 months at Queen Mary's Hospital for the East End and 6 months at East Ham Memorial Hospital. Combined post recognised for D.A. and F.F.A.R.C.S.

Applications, with names of 3 referees, to Group Secretary, West Ham Group Hospital Management Committee, Stratford, E.15, by 24th July, 1957.

ABERDEEN GENERAL HOSPITALS BOARD OF MANAGEMENT. Applications are invited for the appointment of a REGISTRAR in Otolaryngology, with duties in the Aberdeen Royal Infirmary. The post which becomes vacant from 5th October, 1957, is a whole-time one and is non-resident. Salary and conditions of service in accordance with the terms issued by the Department of Health for Scotland.

Applications, giving details of qualifications and experience, with the names of 2 referees, should be lodged with the Group Secretary, Aberdeen General Hospitals, P.O. Box 92, 62, Queen's-road, Aberdeen, within 14 days of the appearance of this advertisement.

ASHFORD HOSPITAL, Ashford, Middlesex. (580 Beds.) STAINES GROUP HOSPITAL MANAGEMENT COMMITTEE. Required, RESIDENT SENIOR HOUSE OFFICER (Male) for general medical duties. Post vacant 13th August, 1957.

Applications, stating age, qualifications and experience, with copies of up to 3 recent testimonials, to Medical Director of Hospital.

AYLESBURY, BUCKINGHAMSHIRE. STOKE MANDEVILLE HOSPITAL. PLASTIC SURGERY AND JAW INJURIES UNIT. (NUFFIELD BURNS UNIT.) Applications are invited for the post of RESIDENT SENIOR HOUSE OFFICER in the above department of the Hospital. Duties will include care of patients in the Burns Unit (under supervision), and also work in general plastic wards and the theatre.

Applications, with the names of 2 referees, to the Administrative Officer.

BARNSTAPLE. NORTH DEVON INFIRMARY. (105 Beds.) HOUSE PHYSICIAN (pre-registration) required. Post vacant mid-July.

Applications to Group Secretary, North Devon Hospital Management Committee, 19, Alexandra-road, Barnstaple.

BARROW-IN-FURNESS. RISEDALE MATERNITY HOSPITAL. BARROW AND FURNESS HOSPITAL MANAGEMENT COMMITTEE. OBSTETRIC AND GYNÆCOLOGY DEPARTMENT. Applications are invited for the resident post of SENIOR HOUSE OFFICER at the above Hospital. Post available middle September, 1957. Hospital approved for D.Obst.R.C.O.G.

Applications to the Group Secretary, 105, Abbey-road, Barrow-in-Furness.

BEDFORD GENERAL HOSPITAL. (436 Beds.) Resident Pre-registration HOUSE PHYSICIAN required end July.

Applications, stating age, qualifications, experience, copies of 2 recent testimonials, to Group Secretary, Bedford Group Hospital Management Committee, 3, Kimbolton-road, Bedford.

BEVERLEY, YORKSHIRE. WESTWOOD HOSPITAL. (229 acute beds.) HOUSE SURGEON (first, second or third post), vacant soon. General surgical duties, some orthopædics. Offering good opportunities for general experience in busy acute general hospital. Recognised for F.R.C.S. Approved pre-registration post. Married quarters may be available.

Applications to Group Secretary.

BEVERLEY, YORKSHIRE. WESTWOOD HOSPITAL. (229 acute beds.) ORTHOPÆDIC HOUSE SURGEON (first, second or third post), vacant now. Offers good opportunity for general experience in busy acute general hospital. Approved pre-registration post. Fully qualified practitioners may apply. Recognised for F.R.C.S.

Apply Group Secretary.

BIRMINGHAM, 18. DUDLEY ROAD HOSPITAL. E.N.T. DEPARTMENT. HOUSE SURGEON (resident), vacant 18th September, 1957. Recognised for D.L.O. Busy Hospital with 780 Beds with approximately 50 E.N.T. beds. Candidates with previous experience in E.N.T. work considered for appointment as Senior House Officer.

Applications, with copies of 2 recent testimonials, to the Group Secretary.

BIRMINGHAM, 18. DUDLEY ROAD HOSPITAL. (775 Beds.) PÆDIATRIC DEPARTMENT. HOUSE PHYSICIAN (vacant 1st September, 1957). Post recognised for D.C.H. Department, under direction of 2 Consultant Pædiatricians, consists of 88 pædiatric beds or cots and 100 neonatal cots. Facilities given for postgraduate instruction and necessary attendance at clinics. Undergraduates of the University of Birmingham attend for Clinical instruction.

Applications, with copies of 3 recent testimonials, to Group Secretary.

BIRMINGHAM (near). THE MIDLAND CENTRE FOR NEUROSURGERY, Holly-lane, SMETHWICK, near BIRMINGHAM. (75 Beds.) SENIOR HOUSE OFFICER. Duties to commence on or about 1st September, 1957. The appointment is for 6 or 12 months and is tenable in medical neurology and neurosurgery.

Applications, with names of 2 referees, to the Group Secretary, West Bromwich and District Hospitals Management Committee.

BIRMINGHAM REGIONAL HOSPITAL BOARD.

(1) **Coventry No. 20 Group, Coventry and Warwickshire Hospital. Coventry**

REGISTRAR (obstetrics and gynæcology—54 Beds) for Coventry and Warwickshire Hospital (354 Beds). Resident. Experience specialty essential. Higher qualification desirable. Hospital recognised for M.R.C.O.G./D.Obst.R.C.O.G. Accepts Birmingham University students.

(2) **Birmingham (Selly Oak) Group, Oak Tree-lane, Birmingham, 29**

REGISTRAR (pathology) for Birmingham Accident Hospital. Vacant now. Previous experience essential. Recognised (12 months) for Diploma in Pathology. Further details from Consultant Pathologist.

(3) **Wolverhampton Group, The Royal Hospital, Wolverhampton**

REGISTRAR (pathology), Resident or partly resident. Experience in specialty an advantage. Duties in all branches of clinical pathology centred on the Royal Hospital.

Application forms from Group Secretaries, to be returned by 29th July, 1957.

BIRMINGHAM REGIONAL HOSPITAL BOARD AND UNITED BIRMINGHAM HOSPITALS. Joint appointment of SENIOR REGISTRAR in Psychiatry. Main duties Monyhull Hall Hospital (1161 Beds, mental deficiency) with 2 notional half-days weekly at the Children's Hospital, Birmingham. Special Unit for high-grade rehabilitation and active Psychological Department and daily work system. Also responsible for St. Francis residential school for E.S.N. and maladjusted children. General experience psychiatry and pædiatrics an advantage. Single accommodation.

Application forms from Secretary, 10, Augustus-road, Birmingham, 15, to be returned by 8th August, 1957.

BIRMINGHAM. SOLIHULL HOSPITAL, Lode-lane, SOLIHULL. OBSTETRIC AND GYNÆCOLOGICAL HOUSE SURGEON (Senior House Officer grade). Post vacant beginning of September.

Applications, stating age, qualifications, nationality, and copies of testimonials, to Medical Superintendent.

BIRMINGHAM. SOLIHULL HOSPITAL, Lode-lane, SOLIHULL. HOUSE SURGEON (pre-registration). Obstetrics, General Hospital. 5 other resident medical staff.

Apply Medical Superintendent.

BIRMINGHAM. THE SKIN HOSPITAL, INPATIENTS' DEPARTMENT, George-road, BIRMINGHAM, 15. SENIOR HOUSE OFFICER or HOUSE OFFICER (resident) required. Modern well-equipped Inpatients' Department, providing facilities for study of skin diseases. Required to assist Consultant at out-patients clinics.

Applications, with copies of 2 recent testimonials, to Group Secretary, Dudley Road Hospital, Birmingham, 18.

BIRMINGHAM. THE UNITED BIRMINGHAM HOS-PITALS. Applications are invited for the post of MEDICAL REGISTRAR (Senior Registrar grade). The appointment is subject to annual review and the successful candidate may subsequently be required to spend not more than 2 years in a selected Hospital of the Birmingham Regional Hospital Board in accordance with the arrangements for the interchange of Registrars agreed between the 2 Boards. The successful candidate may be required to be resident.

Forms of application may be obtained from, and should be returned not later than 10th August, 1957, to, the Secretary, United Birmingham Hospitals, Queen Elizabeth Hospital, Edgbaston, Birmingham, 15.

BIRMINGHAM. THE UNITED BIRMINGHAM HOS-PITALS. Applications are invited for the post of RESIDENT ANÆSTHETIST (Senior House Officer grade). The post is tenable for 1 year. The appointment is recognised for the purpose of taking the F.F.A.R.C.S. examinations.

Application forms from the Secretary, United Birmingham Hospitals, Queen Elizabeth Hospital, Edgbaston, Birmingham, 15, and should be returned to him as soon as possible.

BIRMINGHAM. THE UNITED BIRMINGHAM HOS-PITALS. THE GENERAL HOSPITAL. Applications are invited for the post of RESIDENT CLINICAL PATHOLOGIST (Senior House Officer grade). The post offers wide experience in clinical pathology in a Teaching Hospital Laboratory. The appointment is tenable for 1 year.

Application forms may be obtained from the Secretary, United Birmingham Hospitals, Queen Elizabeth Hospital, Birmingham, 15, and should be returned to him as soon as possible.

BIDEFORD AND DISTRICT HOSPITAL, North Devon. (51 Beds.) SENIOR HOUSE OFFICER required for medical and surgical duties from 19th August, 1957. Married accommodation available in the Hospital.

Applications, stating age, qualifications and experience, and naming 2 referees, to Group Secretary, North Devon Hospital Management Committee, 19, Alexandra-road, Barnstaple.

BISHOP AUCKLAND. THE GENERAL HOSPITAL. HOUSE OFFICER (obstetrics and gynæcology). Applications invited from registered or pre-registration practitioners. Vacant 1st September, 1957. Recognised for D.Obst.R.C.O.G. Departmental beds 69.

Apply, naming 2 referees, to Group Secretary, South West Durham Hospital Management Committee, at above address.

BISHOP AUCKLAND, co. DURHAM. THE GENERAL HOSPITAL. (350 Beds.) HOUSE SURGEON required. Recognised pre-registration appointment.

Apply, naming 2 referees, to K. G. T. LUXFORD, Group Secretary, South West Durham Hospital Management Committee, at the above address.

BEXLEY HOSPITAL, Dartford Heath, Bexley, Kent. BEXLEY HOSPITAL MANAGEMENT COMMITTEE. Applications invited for Locum Tenens SENIOR REGISTRAR (until 1st October, 1957) at above Hospital. Salary £26 8s. per week, with deductions of £3 16s. 9d. per week for board, lodging, &c., if resident. The Hospital (2300 Beds) deals with all types of psychiatric illness, and experience in all modern physical, occupational and psychotherapeutic procedure is available. Opportunities will be available to assist at outpatient clinics.

Applications, with names and addresses of 3 referees, should be sent to Physician-Superintendent, Dr. L. C. COOK, M.D., D.P.M., within 14 days of the appearance of this advertisement.

BOLTON AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. RESIDENT ANÆSTHETIST (Senior House Officer grade). Main duties at Bolton District General Hospital and Bolton Royal Infirmary. Vacant mid-September, tenable for 12 months and recognised for the D.A. and F.F.A.R.C.S.

Applications, stating age, nationality, qualifications, experience, and the names of 2 referees, to Group Secretary, The Royal Infirmary, Bolton.

BURTON GENERAL HOSPITAL AND ANDRESSEY HOSPITAL, BURTON-ON-TRENT. HOUSE SURGEON (gynæcological and obstetrics) required at above Hospital as from 1st July, 1957. Post recognised for pre-registration purposes.

Apply Group Secretary.

BURTON-ON-TRENT. THE GENERAL HOSPITAL. HOUSE SURGEON (general—pre-registration) required at the above Hospital as from 1st August, 1957. Post recognised for F.R.C.S.

Applications to Group Secretary as soon as possible.

BURTON-ON-TRENT. GENERAL HOSPITAL. Junior HOSPITAL MEDICAL OFFICER ANÆSTHETIST required at the above Hospital. Flatlet (furnished or unfurnished) available shortly.

Applications to Group Secretary, General Hospital, Burton-on-Trent, as soon as possible.

BURY AND ROSSENDALE HOSPITAL MANAGEMENT COMMITTEE. BURY GENERAL HOSPITAL. ROSSENDALE GENERAL HOSPITAL. Applications are invited for the posts of HOUSE OFFICER in Surgery at the above Hospitals The posts are vacant now.

Apply, stating full details and names of 2 referees, to—
H. WILKINSON, Group Secretary.

Bury General Hospital, Bury, Lancs.

BURY AND ROSSENDALE HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of JUNIOR HOSPITAL MEDICAL OFFICER in Anæsthetics, to the above Group of hospitals. The post, which will become vacant on 1st October, 1957, is based at Bury General Hospital, and is recognised for the D.A. examination.

Apply, stating full details, and names of 2 referees, to—
H. WILKINSON, Esq., Group Secretary.

Bury General Hospital, Walmersley-road, Bury, Lancs.

BLACKBURN AND DISTRICT HOSPITAL MANAGE-MENT COMMITTEE.

Royal Infirmary, Blackburn

HOUSE SURGEON required immediately. Post recognised for F.R.C.S. and approved for pre-registration purposes.

Queen's Park Hospital, Blackburn

HOUSE SURGEON required for 30th July. Post recognised for F.R.C.S. and approved for pre-registration purposes.

Apply to Group Secretary, Hospital Management Committee Office, Royal Infirmary, Blackburn.

BOURNEMOUTH (near). CHRISTCHURCH HOSPITAL, CHRISTCHURCH, HANTS. BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of a RESIDENT SENIOR HOUSE OFFICER (surgical) for the above Hospital of 334 Beds, including a new Surgical Unit of 56 Beds. The post becomes vacant on 1st September, 1957. There is no emergency surgery undertaken at the moment, but the successful applicant will attend surgical outpatient sessions at the Royal Victoria Hospital, Boscombe.

Applications to the Hospital Secretary, Christchurch, Hospital.

BRIGHTON AND LEWES HOSPITAL MANAGEMENT COMMITTEE. NEW SUSSEX HOSPITAL FOR WOMEN AND SUSSEX MATERNITY HOSPITAL. OBSTETRIC AND GYNÆCOLOGICAL HOUSE SURGEON (Female). Obstetrics at Sussex Maternity (56 Beds) and Gynæcological Department (24 Beds) at New Sussex Hospital.

Applications, giving age, experience and 2 references, to be sent to the Administrative Officer, New Sussex Hospital, Windlesham-road, by 27th July, 1957.

BRIGHTON. ROYAL SUSSEX COUNTY HOSPITAL. (312 Beds.) 2 CASUALTY HOUSE SURGEONS (duties include work in Orthopædic and Traumatic Unit), vacant beginning and end July. Posts recognised for pre-registration and F.R.C.S.

Applications, stating usual particulars, and naming 2 referees, to the Administrative Officer, Royal Sussex County Hospital, Brighton, 7.

BRISTOL. COSSHAM AND FRENCHAY HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER required for the Department of Thoracic Surgery (120 Beds) at Frenchay Hospital.

Apply to Group Secretary, Frenchay Hospital, Bristol, giving age and experience and quoting 2 referees.

CAMBRIDGE. ADDENBROOKE'S HOSPITAL. House OFFICER (E.N.T. Department) for 6 months from early August. Pre-registration (surgical) or post-registration applications will be considered.

Apply to the Secretary at once stating age, nationality, qualifications and experience with dates, and with copies of 3 testimonials.

CAMBRIDGE. ADDENBROOKE'S HOSPITAL. Derma-TOLOGICAL REGISTRAR from 8th October for 1 year in the first instance, renewable for second year.

Apply, with full particulars and names of 3 referees, to Secretary by 31st July.

CANTERBURY. KENT AND CANTERBURY HOS-PITAL. (277 Beds.) The post of OBSTETRIC HOUSE SURGEON, which is recognised for the M.R.C.O.G. and D.Obst. R.C.O.G., becomes vacant in the middle of August, 1957. National Health Service salary and conditions.

Applications, together with 2 recent testimonials, to be addressed to the Hospital Secretary at the above Hospital.

CANTERBURY. KENT AND CANTERBURY HOS-PITAL. (277 Beds.) The post of GENERAL SURGICAL AND UROLOGICAL HOUSE SURGEON (pre-registration or third post), which is recognised for the F.R.C.S., becomes vacant in the middle of August, 1957, National Health Service salary and conditions.

Applications, together with copies of 2 recent testimonials, to be addressed to the Hospital Secretary at the above Hospital.

CARDIFF. ST. DAVID'S HOSPITAL. Senior House OFFICER (may be Locum) required for Accident Unit at above Hospital.

Form of application from Group Secretary, Cardiff Hospital Management Committee, 44, Cathedral-road, Cardiff.

CARLISLE. CUMBERLAND INFIRMARY. (331 Beds.) SENIOR HOUSE OFFICER (general surgery) required. Recognised for F.R.C.S. examination.

Forms of application may be obtained from the Group Secretary, Cumberland Infirmary, Carlisle.

CARLISLE. CUMBERLAND INFIRMARY. (331 Beds.) Applications are invited for the following appointments :—

HOUSE OFFICERS, vacant 1st August, 1957. Recognised for pre-registration purposes :—

3 General Surgery—recognised for F.R.C.S. examination.

1 gynæcology—with some obstetrics.

SENIOR HOUSE OFFICERS, now vacant :—

1 Specials (E.N.T. and eyes).

1 Orthopædics.

Apply to the Group Secretary, Cumberland Infirmary, Carlisle.

CHELMSFORD HOSPITALS. Applications are invited for the post of RESIDENT ANÆSTHETIST (Senior House Officer) to large surgical units. The post is recognised for the D.A. and F.F.A.R.C.S.

Applications, stating age, qualifications, and experience, with recent testimonials, should be sent to the Secretary, Chelmsford Hospital Management Committee, London-road, Chelmsford.

CHELMSFORD, ESSEX. BROOMFIELD HOSPITAL. Required, experienced Locum Tenens SENIOR REGISTRAR for 1 year, full residence or only when on duty. Unit has 312 Beds for the treatment of pulmonary tuberculosis in adults. Tuberculous and non-tuberculous thoracic surgery, chest clinics, and mass radiography.

Apply Physician-Superintendent.

CHERTSEY, SURREY. ST. PETER'S HOSPITAL (late Botley's Park War Hospital). (430 Beds.) RESIDENT HOUSE SURGEON (Senior House Officer or Intern) required for Gynæcological (30 Beds) and E.N.T. (approximately 14 Beds) Departments. Salary in accordance with terms and conditions of National Health Service. Post vacant 15th August.

Applications, together with names and addresses of referees, to be sent to the Physician-Superintendent, St. Peter's Hospital, as soon as possible.

COLCHESTER GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for :—

Essex County Hospital, Colchester, Essex (185 Beds)

Post of HOUSE OFFICER (surgical). First, second, third or pre-registration post, tenable for 6 months. Recognised for F.R.C.S.

Black Notley Hospital, Braintree, Essex (516 Beds)

Post of HOUSE SURGEON (first, second, third or pre-registration post). Includes duties in general surgical and gynæcological wards. Recognised for F.R.C.S.

Post of HOUSE PHYSICIAN (first, second, third or pre-registration post). Includes duties in medical and pædiatric wards.

Applications, with copies of 3 testimonials, to Group Secretary, Colchester Hospital Management Committee, 14, Pope's-lane, Colchester, Essex.

CREWE AND DISTRICT MEMORIAL HOSPITAL. (108 Beds Acute, and continuation 32 Beds.) 2 Pre-registration HOUSE OFFICERS (surgical) required. Approved for F.R.C.S. Salary and conditions in accordance with Whitley Council scale. The appointments may be followed by second posts.

Apply immediately, stating age, qualifications, &c., with names of 2 referees, to the Group Secretary, South Cheshire Hospital Management Committee, Barony Hospital, Nantwich, Cheshire.

CREWE AND DISTRICT MEMORIAL HOSPITAL. REGISTRAR (Orthopædic Department) required. Modern Theatres and Accident Department, incorporating every facility. Full traumatic and orthopædic service being developed. Vacant 1st August, 1957. Salary and conditions as per regulations.

Applications, stating age, qualifications and experience, together with names of 3 referees, to Group Secretary, South Cheshire Hospital Management Committee, Barony Hospital, Nantwich.

CREWE AND DISTRICT MEMORIAL HOSPITAL. (108 Beds Acute, and Continuation 32 Beds.) SENIOR HOUSE OFFICER (casualty). Modern well-equipped department. Whitley Council salary and conditions of service.

Applications, stating age, qualifications, &c., with names of 2 referees, to be sent as soon as possible to the Group Secretary, South Cheshire Hospital Management Committee, Barony Hospital, Nantwich, Cheshire.

DENBIGH. THE NORTH WALES HOSPITAL FOR NERVOUS AND MENTAL DISORDERS. JUNIOR HOSPITAL MEDICAL OFFICER or SENIOR HOUSE OFFICER required. Resident quarters for unmarried person available. The Hospital has modern treatment facilities, and is recognised by the Conjoint Board for the purpose of their D.P.M. examination.

Applications, with names of 2 referees, to the Medical Superintendent.

S. L. FROST, Secretary to the Management Committee.

DERBY. DERBYSHIRE ROYAL INFIRMARY. (416 Beds. Recognised for training for F.R.C.S.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT REGISTRAR (orthopædics) required. Post vacant 1st October. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 29th July, 1957, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

DRIFFIELD, YORKSHIRE. EAST RIDING GENERAL HOSPITAL. (247 Beds.) HOUSE PHYSICIAN (approved pre-registration post). Fully qualified practitioners may apply. Duties include acute and chronic medicine. Good general experience for first house appointment.

Apply Group Secretary, Westwood Hospital, Beverley, Yorkshire.

CHICHESTER. ST. RICHARD'S AND ROYAL WEST SUSSEX HOSPITALS. Applications are invited for the post of RESIDENT OBSTETRIC AND GYNÆCOLOGY SENIOR HOUSE SURGEON, for 6 months in first instance. Obstetric (16 Beds), St. Richard's Hospital (where resident) and gynæcology at both Hospitals. Occasional relief duties at Maternity Hospital, Rustington (52 Beds). Team of Consultant, Senior Hospital Medical Officer, Registrar and Senior House Surgeon. Salary : £819 10s. p.a., less £150 for residence.

Apply Group Secretary, 174, Broyle-road, Chichester, giving names of 2 referees.

EBBW VALE GENERAL HOSPITAL. (General Beds 71—Maternity 15.) Applications are invited for the appointment of a SENIOR HOUSE OFFICER. The Hospital is an active Surgical Unit and the Medical staff consists of a Resident Surgeon and Junior Hospital Medical Officer and visiting Orthopædic, Gynæcological and Ophthalmic Surgeons. The tenure of appointment shall be for a period of 12 months.

Apply, giving full details and references, to Group Secretary, North Monmouthshire Hospital Management Committee, Nevill Hall, Abergavenny, Mon.

EDGWARE GENERAL HOSPITAL, Edgware, Middlesex. Locum CASUALTY REGISTRAR required at above Hospital from 25th August to 7th September, 1957.

Apply immediately to Medical Director (EDGware 2381).

ENFIELD, MIDDLESEX. CHASE FARM HOSPITAL. RESIDENT HOUSE SURGEON (pre-registration post), vacant 30th September, 1957. Duties with General Surgical Unit, doing some genito-urinary work. Post recognised by the Royal College of Surgeons. 6 months appointment.

Applications, with the names and addresses of 2 referees, to the Group Secretary, Enfield Group Hospital Management Committee, at Chase Farm Hospital.

ENFIELD. WAR MEMORIAL HOSPITAL, Chase Side, ENFIELD, MIDDLESEX. RESIDENT SENIOR HOUSE OFFICER required for general medical and surgical duties ; acute general hospital of 61 Beds. Vacant 1st August, 1957. 12 months appointment.

Applications, with names and addresses of 2 referees, to the Group Secretary, Enfield Group Hospital Management Committee, Chase Farm Hospital, The Ridgeway, Enfield, Middlesex.

EPSOM DISTRICT HOSPITAL, Dorking-road, Epsom, SURREY. EPSOM GROUP HOSPITAL MANAGEMENT COMMITTEE. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for Whole-time REGISTRAR (general medicine) at above Hospital. Resident or non-resident. Vacancy 20th October, 1957. Candidates may visit by appointment with Consultant concerned.

Forms of application (send stamped addressed foolscap envelope) may be obtained from Group Secretary, Epsom District Hospital, for completion and return by 2nd August, 1957.

GLASGOW. GARTLOCH HOSPITAL, Gartcosh, Glas-gow, require 2 HOUSE OFFICERS for Medical Unit (104 Beds). 6-monthly posts commencing 1st August, 1957. National salary scale.

Apply immediately in writing, stating age, training and names of 2 referees, to the Medical Superintendent.

GLASGOW ROYAL INFIRMARY. Junior House Officer in Plastic Surgery.

Apply in writing, giving 2 names for reference, to the Group Medical Superintendent, Glasgow Royal Infirmary, 84, Castle-street, Glasgow, C.4.

GRANTHAM AND KESTEVEN GENERAL HOSPITAL. (117 Beds. Recognised for training for F.R.C.S.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT SURGICAL REGISTRAR required. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 29th July, 1957, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

GUILDFORD. ROYAL SURREY COUNTY HOSPITAL. (232 Beds.) SENIOR HOUSE OFFICER required 1st September for E.N.T. Department. Post recognised for D.L.O. and F.R.C.S. examinations.

Applications, with copies of 3 testimonials, should be sent to the Hospital Secretary as soon as possible.

HASTINGS. ST. HELEN'S HOSPITAL. (493 Beds.) HOUSE SURGEON required. Pre-registration post recognised for F.R.C.S. Modern Theatre. Staff of 4. Post vacant 1st August, 1957.

Apply to Hospital Administrator as soon as possible.

HASTINGS AND ST. LEONARDS-ON-SEA. BUCHAN-AN HOSPITAL (94 Beds.) Locum SENIOR HOUSE OFFICER (urology) required 2nd August, 1957, for approximately 1 months appointment. Salary £15 19s. a week, less board.

Applications, for whole or part of the period, should give names of 2 referees and should be addressed to the Hospital Administrator.

HILLINGDON HOSPITAL, Uxbridge, Middlesex. (621 Beds.) REGISTRAR in Surgery for General and Genito-Urinary work.

Application forms obtainable from, and returnable to, Hospital Secretary by 29th July.

HEXHAM GENERAL HOSPITAL, Northumberland. (304 Beds.) HOUSE SURGEON. Post (pre- or post-registration), combining general surgery with orthopædic experience, vacant in August. Recognised by R.C.S.

Applications, with names and addresses of 2 referees, to Group Secretary, General Hospital, Hexham, as early as possible.

HEMEL HEMPSTEAD, HERTFORDSHIRE. WEST HERTS HOSPITAL. Locum Tenens CASUALTY OFFICER (Junior Hospital Medical Officer) required for period 12th August–1st September (inclusive).

Please apply to the Hospital Secretary.

HEMEL HEMPSTEAD. WEST HERTS HOSPITAL. NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. ANÆSTHETIC REGISTRARS (2) required at above Hospital. New posts. Application made for recognition by Faculty.

Application forms obtainable from, and returnable to, Secretary, West Herts Group Hospital Management Committee, 9, Rickmansworth-road, Watford, Herts, by not later than 10 days after the appearance of this advertisement.

HITCHIN, HERTFORDSHIRE. LISTER HOSPITAL. RESIDENT CASUALTY OFFICER, for duty with Accident Service and care of traumatic and orthopædic inpatients, required 10th August, 1957. The post is recognised for F.R.C.S. Salary £852 10s.–£1182 10s. p.a., according to experience.

Applications, stating age, nationality, qualifications and experience, together with copies of 3 recent testimonials, to be sent to Medical Administrator at the above Hospital by 1st August, 1957.

HUDDERSFIELD. MILL HILL HOSPITAL. (132 Beds.) HUDDERSFIELD HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of RESIDENT MEDICAL OFFICER (Junior Hospital Medical Officer grade—£852 10s.–£55–£1182 10s. p.a.), at the above Hospital. The present allocation of beds is 28 for infectious diseases and 104 for geriatric patients.

Applications, together with copies of 3 recent testimonials, to be addressed to the undersigned as soon as possible.

H. J. JOHNSON, Group Secretary,
Huddersfield Hospital Management Committee.
The Royal Infirmary, Huddersfield.

HUDDERSFIELD ROYAL INFIRMARY. (285 Beds.) HUDDERSFIELD HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from provisionally registered medical practitioners for the post of HOUSE PHYSICIAN, to commence duties on 1st August, 1957. Salary in accordance with national scale.

Applications, together with copies of 3 recent testimonials, to be addressed to the undersigned as soon as possible.

H. J. JOHNSON, Secretary to the Management Committee.
The Royal Infirmary, Huddersfield.

HUDDERSFIELD ROYAL INFIRMARY. (285 Beds.) HUDDERSFIELD HOSPITAL MANAGEMENT COMMITTEE. 2 HOUSE SURGEONS required, 1 to commence duty immediately, and the other on 23rd July, 1957. The posts are recognised as pre-registration appointments and for the F.R.C.S. Salary in accordance with national scale.

Applications, together with copies of 3 recent testimonials, to be addressed to the undersigned as soon as possible.

H. J. JOHNSON, Secretary to the Management Committee.
The Royal Infirmary, Huddersfield.

HUNTINGDON COUNTY HOSPITAL. Applications are invited for the post of HOUSE OFFICER (medical). Post recognised for pre-registration purposes. The selected candidate will be required to look after medical and pædiatric cases and may be called upon to give emergency anæsthetics. Post vacant end July.

Apply, with full particulars and names of 2 referees, to Secretary, County Hospital, Huntingdon.

HUNTINGDON COUNTY HOSPITAL. Applications are invited for the post of HOUSE OFFICER (surgical), now vacant. Post recognised for pre-registration purposes.

Apply, with full particulars and names of 2 referees, to Secretary, County Hospital, Huntingdon.

IPSWICH AND EAST SUFFOLK HOSPITAL. Heath ROAD WING, IPSWICH. (280 Beds.) Applications invited for RESIDENT SENIOR HOUSE OFFICER to Pædiatric Unit, vacant 25th August. Appointment recognised for D.C.H. and normally of 12 months tenure.

Applications, with full particulars and copies of 2 recent testimonials, to the Hospital Secretary.

IPSWICH AND EAST SUFFOLK HOSPITAL. Heath ROAD WING, IPSWICH. (280 Beds.) Post of HOUSE SURGEON (pre-registration), to 2 General Surgeons, now vacant. Recognised for R.C.S. examinations.

Applications, with full details and recent testimonials, to Hospital Secretary.

IPSWICH AND EAST SUFFOLK HOSPITAL. Anglesea ROAD WING. (356 Beds.) Applications are invited for the post of HOUSE SURGEON to the Fracture and Orthopædic Department. Approved pre-registration post.

Applications, with copies of recent testimonials, to the Hospital Secretary.

IPSWICH AND EAST SUFFOLK HOSPITAL. Anglesea ROAD WING. (356 Beds.) Applications are invited for the post of HOUSE SURGEON to the Senior Consultant General Surgeon. The post is recognised for pre-registration and for the F.R.C.S. examinations.

Applications, with copies of recent testimonials, to Hospital Secretary.

IPSWICH AND EAST SUFFOLK HOSPITAL. Anglesea ROAD WING. (356 Beds.) Applications are invited for the post of HOUSE SURGEON to the Consultant General Surgeon. The post is recognised for pre-registration and for the F.R.C.S. examinations.

Applications, with copies of recent testimonials, to Hospital Secretary.

ILFORD. KING GEORGE HOSPITAL. There will be a vacancy for a SENIOR HOUSE OFFICER ANÆSTHETIST at above Hospital on 19th August. The Officer appointed will be required to be available for duty in other hospitals in the Group. Salary will be at the rate of £819 10s. p.a., less £150 p.a. emoluments.

Applicants should have been registered not less than 1 year, and should send applications, accompanied by copies of 3 testimonials, to the undersigned within 7 days of the appearance of this advertisement.

H. F. HARRIS, Group Secretary,
Ilford and Barking Group Hospital Management Committee.
King George Hospital, Ilford.

ILFORD. KING GEORGE HOSPITAL. There is a vacancy for a CLINICAL ASSISTANT (dermatology) at the above Hospital. 1 session per week (Wednesday P.M.). Remuneration in accordance with the terms and conditions of service of hospital medical and dental staffs (England and Wales)—i.e., £183 15s. p.a.

Applications, accompanied by testimonials, to be sent to the undersigned within 7 days of the appearance of this advertisement.

H. F. HARRIS, Group Secretary,
Ilford and Barking Group Hospital Management Committee.
King George Hospital, Ilford.

KETTERING AND DISTRICT GENERAL HOSPITAL. Applications are invited for the post of HOUSE SURGEON (pre-registration). Post recognised for F.R.C.S.

Applications, stating age, experience and qualifications, together with copies of 3 recent testimonials, to be sent to the Group Secretary, General Hospital, Kettering.

KINGSTON HOSPITAL, Wolverton-avenue, Kingston-ON-THAMES. KINGSTON GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from suitably qualified medical officers for the post of SENIOR HOUSE OFFICER (general surgery) which is available on 1st September, 1957. The post is recognised for F.R.C.S. purposes.

Applications, stating age, qualifications and experience with 2 testimonials, should reach the Physician-Superintendent of the Hospital within 7 days of the appearance of this advertisement.

LANCASTER. BEAUMONT HOSPITAL. Resident SENIOR HOUSE OFFICER (E.N.T.) for a newly constructed self-contained ward and Theatre Unit, with attendance at outpatients at Lancaster, Kendal and Morecambe.

Applications, with names of 2 referees, to Group Secretary, Royal Lancaster Infirmary, Lancaster.

LEEDS, 7. CHAPEL ALLERTON HOSPITAL. (229 Beds.) SENIOR HOUSE OFFICER (surgical) required. National Health Service terms and conditions.

Apply Medical Superintendent.

LEEDS REGIONAL HOSPITAL BOARD. Registrar vacancies.

Anæsthetics

St. James's Hospital, Leeds (approximately 500 surgical beds). Recognised for F.F.A.R.C.S. Resident.

General Medicine

Hull A Group (294 general medical beds) and East Riding Group (78 general medical beds). Duties 6/11 Hull A and 5/11 East Riding. Holder to reside in Beverley.

General Surgery

Hull Royal Infirmary (80 general surgical beds) and other hospitals in the Hull A Group. Duties those of Resident Surgical Officer and includes additional duties in the Casualty Department.

Orthopædic Surgery

Marguerite Hepton Memorial Orthopædic Hospital, Thorp Arch, near Wetherby (78 long-stay children's beds). A 3-bedroomed partly furnished house is available in the Hospital grounds.

Psychiatry

(i) Menston Hospital, near Leeds (2500 Beds).

(ii) De la Pole Hospital, Willerby (1175 Beds), and associated clinics. Resident or non-resident.

If desired, facilities for attendance at Leeds University will be provided if the successful candidates are studying for the D.P.M.

Applications, stating age, qualifications and details of present and previous appointments with dates, together with the names and addresses of 3 referees, to the Secretary, Joint Registrars Committee, Park-parade, Harrogate, by 9th August, 1957.

LEEDS. THE UNITED LEEDS HOSPITALS. The GENERAL INFIRMARY AT LEEDS. REGISTRAR required for the Radiotherapy Centre. Candidates with D.M.R. preferred. The post will be tenable for 1 year in the first instance and renewable for a second. Terms and conditions of service for hospital medical staff apply.

Applications, stating age, qualifications, previous posts with dates, with 3 names for reference, should be sent to the Sub-Dean, School of Medicine, Leeds, 2, by Thursday, 1st August, 1957.

LEEDS. THE UNITED LEEDS HOSPITALS. The GENERAL INFIRMARY AT LEEDS. RESIDENT RADIOTHERAPY OFFICER (Senior House Officer status), required, for a period of 6 months. The post affords facilities for training for D.M.R.T. Conditions of service for hospital medical staff apply.

Applications, stating age, qualifications, previous posts with dates, and 3 names for reference, should be sent to the Secretary to the Board, as soon as possible.

LEEDS. THE UNITED LEEDS HOSPITALS. The GENERAL INFIRMARY AT LEEDS. REGISTRAR to the Professorial Surgical Unit at the General Infirmary required. Possession of Final F.R.C.S. (England) not absolutely essential but should have primary F.R.C.S. examination. Salary and conditions of service as defined by Whitley Council.

Applications, stating age, qualifications, and experience, together with 3 names for reference, should be sent to the Sub-Dean, School of Medicine, Leeds, 2, not later than 30th July, 1957.

LINCOLN COUNTY HOSPITAL. (200 Beds.) Applications are invited for the post of SENIOR HOUSE OFFICER in Surgery (vacant immediately) for a period of 6 months, to be followed, if satisfactory, by a further period of 6 months.

Full particulars should be sent to—

R. W. HOWICK, Group Secretary.

LINCOLN COUNTY HOSPITAL. (200 Beds.) Applications are invited from pre-registration candidates for appointment as HOUSE PHYSICIAN for a period of 6 months. Vacant immediately.

Full particulars should be sent to—

R. W. HOWICK, Secretary.

LINCOLN COUNTY HOSPITAL. (200 Beds.) Applications are invited from pre-registration candidates for appointments as HOUSE SURGEONS for 6 months to be followed if satisfactory by appointments as House Physicians for a further 6 months.

Full particulars should be sent to—
R. W. HOWICK, Group Secretary.

LINCOLN. LAWN HOSPITAL, Union-road. (Mental Hospital for Private and Amenity Bed Patients—100 Beds.) LINCOLN NO. 2 HOSPITAL MANAGEMENT COMMITTEE. JUNIOR HOSPITAL MEDICAL OFFICER, or SENIOR HOUSE OFFICER (full-time or Locum) required. All modern treatments used at this active Hospital. Pleasant flat available.

Apply to the Medical Superintendent with copies of 3 testimonials.

LIVERPOOL, 18. MOSSLEY HILL HOSPITAL. Senior HOUSE OFFICER (surgical) required. National Health Service terms and conditions.

Apply Medical Superintendent.

LIVERPOOL. THE UNITED LIVERPOOL HOSPITALS. ROYAL LIVERPOOL CHILDREN'S HOSPITAL. Applications are invited for temporary appointment to the post of SENIOR CASUALTY OFFICER (Senior House Officer grade), resident or non-resident, to take up duty as soon as possible for the period to 31st March, 1958.

Apply by 1st August on form obtainable from the Secretary, The United Liverpool Hospitals, 80, Rodney-street, Liverpool, 1.

LIVERPOOL. THE UNITED LIVERPOOL HOSPITALS. LIVERPOOL REGIONAL HOSPITAL BOARD. Applications are invited for a post of REGISTRAR in Pathology for duty at the Liverpool Stanley Hospital, Bootle Hospital and Waterloo Hospital for the period from 1st September, 1957 (or as soon thereafter as possible), to 30th September, 1958. Annual reappointment thereafter until completion of the normal period of training will be considered without need for further application.

Apply by 3rd August on form obtainable from the Secretary, The United Liverpool Hospitals, 80, Rodney-street, Liverpool, 1.

LLANELLY HOSPITAL, Llanelly. (164 Beds.) Glantawe HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of SENIOR HOUSE OFFICER in the Casualty Department of the above Hospital.

Full particulars, stating age, experience and qualifications, together with copies of 2 recent testimonials, should be forwarded to the Hospital Secretary. T. E. JONES, Group Secretary.

LOUTH, LINCOLNSHIRE. COUNTY HOSPITAL. (215 Beds.) GRIMSBY HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER (surgical), vacant 31st August, 1957, at this General Hospital.

Applications, giving full details, together with the names of 2 referees, should be addressed to the Hospital Secretary.

LUTON AND DUNSTABLE HOSPITAL, Luton, Bedfordshire. Locum SENIOR SURGICAL REGISTRAR (resident) required for the whole of August.

Apply Medical Director at above Hospital (Luton 3100).

LUTON AND DUNSTABLE HOSPITAL, Luton, Bedfordshire. SENIOR HOUSE OFFICER for Accident Service, including duties in the Hand Infection Unit, required 1st August, 1957. Post recognised for F.R.C.S.

Applications, stating age, nationality, qualifications and experience, together with copies of 3 recent testimonials, to be sent to the Secretary of the above Hospital.

MACCLESFIELD HOSPITAL. (301 Beds.) Vacancy: SENIOR HOUSE OFFICER in Medicine. Department has 56 acute beds together with some chronic sick beds. Excellent opportunities available for gaining valuable experience.

Apply immediately, with full particulars and names of 2 referees, to Group Secretary, Macclesfield and District Hospital Management Committee, Willerby House, Cumberland-street, Macclesfield.

MAIDSTONE. WEST KENT GENERAL HOSPITAL. (141 Beds.) MID-KENT HOSPITAL MANAGEMENT COMMITTEE. CASUALTY OFFICER (Senior House Officer). Recognised for F.R.C.S. Salary £819 10s. a year, less £150 a year for board and lodging. Post vacant now.

Applications to the Administrative Officer at the Hospital.

MAIDSTONE. KENT COUNTY OPHTHALMIC AND AURAL HOSPITAL. (113 Beds.) MID-KENT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of SENIOR HOUSE SURGEON in the E.N.T. Department of the above Hospital. Post vacant 1st August, 1957. There are 55 E.N.T. beds and 6 specialist operating sessions each week. Valuable experience is available, and the post is recognised for the purpose of the F.R.C.S. and the D.L.O. Salary will be £819 10s. a year, less £150 a year for residential emoluments.

Applications to the Administrative Officer, Kent County Ophthalmic and Aural Hospital, Maidstone, Kent.

MANCHESTER. BOOTH HALL CHILDREN'S HOSPITAL, BLACKLEY, MANCHESTER, 9. RESIDENT SURGICAL OFFICER (Registrar) required. Post vacant. 3-roomed furnished flat available if required. Hospital is part of University Department of Child Health, carries out undergraduate teaching, and is recognised for D.C.H. 160 active surgical beds including all branches except thoracic surgery. Patients admitted from birth to 16 years.

Applications to Group Secretary, together with names of 2 referees, as soon as possible.

MANCHESTER. WEST MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. PARK HOSPITAL, DAVYHULME. (General Hospital—433 Beds.) SENIOR HOUSE PHYSICIAN (pædiatrics) required for mid-August. Previous experience essential. There is a Midwifery Unit of 73 Beds and a Pædiatric Unit which includes 10 thoracic surgical beds. Recognised for D.C.H.

Application forms from Secretary.

MANCHESTER REGIONAL HOSPITAL BOARD. South MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. The Board invite applications from registered practitioners for the post of ANÆSTHETIC REGISTRAR with duties in the South Manchester Group. The post is recognised by the Royal College of Surgeons for the F.F.A.R.C.S. and for the D.A.

Applications, stating age, qualifications, present post, experience, and names of 2 referees, to be forwarded to the Group Secretary, Withington Hospital, Manchester, 20.

MANCHESTER REGIONAL HOSPITAL BOARD. 2 posts of SENIOR REGISTRAR in Radiology, as follows :—

(*a*) South Manchester Group of Hospitals, mainly at Withington Hospital.

(*b*) Salford Group of Hospitals, mainly at Salford Royal and at Hope and Royal Manchester Children's Hospitals.

Arrangements may later be made for the persons appointed to transfer to the United Manchester Hospitals (Manchester Royal Infirmary, &c.).

Application forms obtainable from the Senior Administrative Medical Officer of the Board, Cheetwood-road, Manchester, 8, to be returned by 29th July, 1957.

MANCHESTER REGIONAL HOSPITAL BOARD. North AND MID-CHESHIRE GROUP OF HOSPITALS. ALTRINCHAM GENERAL HOSPITAL AND ANNEXE, near MANCHESTER. (130 Beds. Recognised under F.R.C.S. Regulations.) Applications are invited for the post of SURGICAL REGISTRAR, vacant end of August. This appointment, in a busy general hospital, with duties at other hospitals in the Group, offers excellent opportunities of practical surgical experience to suitably qualified candidates.

Applications, together with 2 recent testimonials, to be sent to Group Secretary, North and Mid-Cheshire Hospital Management Committee, Sinderland-road, Altrincham, Cheshire.

MANCHESTER REGIONAL HOSPITAL BOARD. SalFORD HOSPITAL MANAGEMENT COMMITTEE.

REGISTRAR in Neurosurgery required with duties at Salford Royal Hospital and the Royal Manchester Children's Hospital. Resident or non-resident.

RESIDENT SURGICAL REGISTRAR required at Hope Hospital. Previous experience in surgery essential and Diploma of F.R.C.S. desirable.

Applications, with names of 2 referees, to Group Secretary, Salford Royal Hospital, Salford, 3, before 3rd August, 1957.

MANCHESTER. UNITED MANCHESTER HOSPITALS. MANCHESTER ROYAL INFIRMARY. MANCHESTER, 13. REGISTRAR to a General Medical Unit, in which is housed the University Department of Neurology, to commence on 1st October, 1957. Whole-time, non-resident post, tenable for 12 months, renewable.

Application to be made on form obtainable from the undersigned, to be returned not later than 3rd August, 1957.

G. H. TAYLOR, Secretary.

MANCHESTER. UNITED MANCHESTER HOSPITALS. MANCHESTER ROYAL INFIRMARY, MANCHESTER, 13. SENIOR HOUSE OFFICER to the Department of Hæmatology, to commence as soon as possible. Whole-time, non-resident post, tenable for 6 months, renewable for a second and possibly a third 6 months.

Application form obtainable from the undersigned, to be returned not later than 3rd August, 1957.

G. H. TAYLOR, Secretary.

MANCHESTER. UNITED MANCHESTER HOSPITALS. SAINT MARY'S HOSPITALS, MANCHESTER. Applications are invited for 3 posts of SENIOR HOUSE OFFICER in Gynæcology. Applicants must have had previous hospital experience in medicine and surgery. The posts are recognised for the purpose of the M.R.C.O.G. examination. The appointments are for 6 months, starting 1st October, 1957. Salary in accordance with national scale.

Application forms may be obtained from the undersigned and returned not later than 6th August, 1957.

A. R. WISE, General Superintendent.
Saint Mary's Hospitals, Whitworth Park, Manchester.

MANCHESTER, 20. WITHINGTON HOSPITAL. South MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of RESIDENT CLINICAL PATHOLOGIST (Senior House Officer grade), vacant on 2nd September, 1957. Previous experience in pathology not essential, the post affording opportunities for gaining experience in all branches of clinical pathology.

Applications, stating age, qualifications, present post, experience, and the names of 2 referees, to be forwarded to the Group Secretary, Withington Hospital, Manchester, 20.

MEDWAY AND GRAVESEND HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER in Anæsthetics (recognised for the F.F.A.R.C.S.), vacant middle of August and tenable for 1 year. Salary £819 10s., less £150 p.a. if resident. The appointment may include duties at St. Bartholomew's Hospital, Rochester, All Saints' Hospital, Chatham, and Gravesend and North Kent Hospital, and provides excellent training under Consultant supervision.

Applications, stating age, qualifications and experience, to Group Secretary, 20, Star-hill, Rochester, Kent.

MID GLAMORGAN HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the following medical staff vacancies :—

Neath General Hospital, Neath (412 Beds)
HOUSE SURGEONS.

Port Talbot General Hospital, Hospital-road, Port Talbot (85 Beds)
SENIOR HOUSE OFFICER (general surgery).

Neath General Hospital is recognised for the F.R.C.S. and approved by the General Medical Council for Pre-registration Service.

Applications, naming 2 referees, to be addressed to the Group Secretary of the Committee, 8, Wind-street, Neath.

MERTHYR TYDFIL. ST. TYDFIL'S HOSPITAL. (375 Beds.) Applications are invited for the post of RESIDENT SENIOR HOUSE OFFICER (casualty).

Apply immediately, with full particulars and copies of 2 recent testimonials, to Group Secretary, Merthyr and Aberdare Hospital Management Committee, St. Tydfil's Hospital, Merthyr Tydfil.

NEWCASTLE GENERAL HOSPITAL. Newcastle upon TYNE HOSPITAL MANAGEMENT COMMITTEE. DEPARTMENT OF NEUROLOGICAL SURGERY: REGIONAL UNIT. The posts of SENIOR HOUSE OFFICERS (2), either resident or non-resident, become vacant in October, 1957.

Applications, with 1 copy of 2 recent testimonials, should be sent to the Secretary, Newcastle General Hospital, Newcastle upon Tyne, 4.

NEWMARKET GENERAL HOSPITAL. Applications are invited for the post of HOUSE SURGEON, vacant 27th July, 1957. Duties include surgical house charge of genera surgical and some eye cases. Post resident and available for 6 months, recognised for pre-registration.

Applications, with copies of 3 testimonials, to the Medical Superintendent.

NEWMARKET GENERAL HOSPITAL. Applications are invited for the post of HOUSE PHYSICIAN, vacant 28th August, 1957. Duties include house charge of general medical and pulmonary tuberculosis beds. The post is recognised for pre-registration, is resident, and tenable for 6 months. Salary in accordance with national scale.

Applications, with 3 recent testimonials, to Medical Superintendent.

NEWPORT, MONMOUTHSHIRE. ROYAL GWENT HOSPITAL. (260 Beds. 10 Residents. Recognised F.R.C.S.) SENIOR HOUSE OFFICER required for Casualty Department about 1st August, which is under the full-time charge of a Senior Hospital Medical Officer and there are also 2 Senior House Officers. The Department has recently been rebuilt and re-equipped, and all medical and surgical admissions pass through it. Tenable 6 or 12 months at candidate's option. Excellent experience.

Write, quoting 2 referees, to T. A. JONES, Group Secretary. 64, Cardiff-road, Newport, Mon.

NORTHWOOD, MIDDLESEX. MOUNT VERNON HOSPITAL. (551 Beds.) NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. REGISTRAR required in the X-ray Diagnostic Department at above Hospital for 1 year in first instance.

Application forms obtainable from, and returnable to, the Group Secretary, Harefield and Northwood Group Hospital Management Committee, Mount Vernon Hospital, Northwood, Middx, by 3rd August, 1957. Hospital may be visited by direct appointment.

NOTTINGHAM. CITY HOSPITAL. (811 Beds.) Applications are invited for the post of HOUSE SURGEON, vacant 1st September, 1957. Recognised for pre-registration purposes.

Applications, stating age, nationality, qualifications and experience, together with copies of not more than 3 testimonials, to be sent to the Hospital Secretary, City Hospital, Hucknall-road, Nottingham.

NOTTINGHAM. CITY HOSPITAL. (811 Beds.) Applications are invited for the post of HOUSE PHYSICIAN vacant on 1st September, 1957. Recognised for pre-registration purposes.

Applications, stating age, nationality, qualifications and experience, together with copies of not more than 3 testimonials, to be sent immediately to the Hospital Secretary, City Hospital, Hucknall-road, Nottingham.

NOTTINGHAM GENERAL HOSPITAL. Resident pre-registration or registered HOUSE SURGEONS required 31st July.

Applications, stating age, qualifications and nationality, together with copies of testimonials, to be sent to the Group Secretary.

NOTTINGHAM GENERAL HOSPITAL. 2 Senior HOUSE OFFICERS (medical) required; duties to commence end August and mid-September.

Applications, stating age, qualifications and experience, and nationality, together with copies of testimonials, to be sent to the Group Secretary, General Hospital, Nottingham.

NOTTINGHAM GENERAL HOSPITAL. Senior House OFFICER (surgery) required; duties to commence about mid-August.

Applications, stating age, qualifications and experience, and nationality, together with copies of testimonials, to be sent to the Group Secretary, General Hospital, Nottingham.

NOTTINGHAM. HIGHBURY HOSPITAL, Bulwell, NOTTINGHAM. SENIOR HOUSE OFFICER (medical), required. The successful candidate will, in addition to medical duties, have an opportunity of assisting in the Obstetric Unit. This post will be accepted as a general medical appointment entry to the M.R.C.O.G. examination.

Apply in writing, stating age, qualifications and experience, together with copies of testimonials, to the Hospital Secretary.

OXFORD REGIONAL HOSPITAL BOARD. Registrar in General Surgery at Northampton General Hospital, with some duties in Thoracic Surgery at Creaton Hospital, Northants.

Applications, on forms obtainable from the Secretary, Registrars Committee, 43, Banbury-road, Oxford, should reach him by 2nd August, 1957.

PLYMOUTH. MOUNT GOLD HOSPITAL. Applica-tions are invited for the post of SENIOR HOUSE OFFICER for the Orthopædic and Fracture Service centring on Mount Gold Orthopædic and associated hospitals. Post recognised by R.C.S. vacancy early in September.

Applications, stating age, qualifications with dates, &c., and with copies of 2 recent testimonials, to be forwarded to the Secretary, Mount Gold Hospital, Plymouth, within 14 days of this advertisement appearing.

PLYMOUTH. SOUTH DEVON AND EAST CORNWALL HOSPITAL. SENIOR HOUSE OFFICER in Anæsthetics, vacant immediately. Recognised for the D.A. and F.F.A.R.C.S.

Applications, giving age, nationality and experience, with names of 3 referees, to be sent to—

F. HALL, Deputy Group Secretary, Plymouth, South Devon and East Cornwall General Hospital Group. 7, Nelson-gardens, Stoke, Plymouth.

PLYMOUTH. THE SCOTT ISOLATION HOSPITAL. PLYMOUTH SPECIAL HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of SENIOR HOUSE OFFICER from Male registered medical practitioners who have preferably been qualified for 1 year, and have had previous hospital experience. The applicant should be able to drive a car. The duties, in 2 departments, will be chiefly in connection with infectious and venereal diseases, the former including a substantial proportion of cases in children. The varied clinical work, including acute medical cases, provides valuable experience, particularly to those reading for a higher medical degree, or contemplating General Practice. The appointment will be for 1 year, vacant on 25th August, 1957. The post is non-resident, but the successful candidate will be required to live near the Hospital and be on the telephone.

Applications, together with copies of 2 recent testimonials, should be sent to the Group Secretary, Plymouth Special Hospital Management Committee, 8, Nelson-gardens, Stoke, Plymouth.

PLYMOUTH. THE SCOTT ISOLATION HOSPITAL. HOUSE PHYSICIAN (resident, Male), post vacant 25th August, 1957. Recognised pre-registration post which offers excellent experience.

Applications should be sent to the Group Secretary, Plymouth Special Hospital Management Committee, 8, Nelson-gardens, Stoke, Plymouth, Devon.

PONTYPRIDD AND RHONDDA HOSPITAL MANAGE-MENT COMMITTEE.

East Glamorgan Hospital, Church Village, near Pontypridd (316 Beds and large Outpatient Department. Committee's Base Hospital serving population of 174,000. Recognised for D.Obst.R.C.O.G., F.R.C.S., D.C.H., F.F.A.R.C.S., D.A.)

HOUSE OFFICER (surgery) (to include duties at Porth and District Hospital), to commence 1st August, 1957.

Llwynypia Hospital, Llwynypia, Rhondda (50 acute medical beds: geriatric beds: serving area population of 112,000)

HOUSE OFFICER (medicine), to commence 1st August, 1957. To also undertake duties at the Group Infectious Diseases Hospital when required.

Applications, stating age, qualifications and experience, together with copies of 2 recent testimonials, to be sent to the Group Secretary, Courthouse-street, Pontypridd.

PONTEFRACT GENERAL INFIRMARY. House Surgeon required. This is an approved pre-registration post under Medical Act, 1950, but applications will be considered from fully registered practitioners. Hospital approved under F.R.C.S. regulations and provides excellent surgical experience. Post vacant 20th July, 1957.

Applications to the Secretary, Pontefract and Castleford Hospital Management Committee, Great Northern House, Salter-row, Pontefract, Yorkshire, as soon as possible.

PORTSMOUTH GROUP HOSPITAL MANAGEMENT COMMITTEE.

Queen Alexandra Hospital

SENIOR HOUSE OFFICER (general medicine and dermatology), vacant 22nd July, 1957.

HOUSE SURGEON (87 surgical beds) (pre-registration), vacant now.

HOUSE PHYSICIAN (78 medical beds) (pre-registration), vacant 30th July, 1957.

Saint Mary's Hospital (130 surgical beds)

HOUSE SURGEONS (pre-registration), vacant 30th July, 1957, 1st August, 1957, and 11th August, 1957 (2).

HOUSE PHYSICIANS (74 medical beds) (pre-registration), vacant 30th July, 1957, 31st July, 1957 (2), and 13th August, 1957.

HOUSE OFFICER (53 pædiatric beds), vacant 15th August, 1957.

Royal Portsmouth Hospital (61 medical beds)

HOUSE PHYSICIANS (pre-registration), vacant now and 10th August, 1957.

HOUSE OFFICER (15 pædiatric beds) (pre-registration), general medical and pædiatric. Vacant 1st August, 1957.

Royal Portsmouth Hospital, Orthopædic Department (104 Beds)

HOUSE OFFICER (pre-registration), vacant 27th August.

Applications, stating age, experience, and qualifications, together with the names of 2 referees, should be forwarded as soon as possible to E. H. HURST.

Saint Mary's Hospital, Milton-road, Portsmouth.

READING AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER for E.N.T. Department, Royal Berkshire Hospital, Reading (40 Beds). Post recognised for D.L.O.

Applications, stating age, nationality, experience and qualifications, together with names of 2 referees, should be sent to Group Secretary, 3, Craven-road, Reading.

READING AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of RESIDENT SENIOR HOUSE OFFICER (area Accident and Orthopædic Department), vacant immediately. Recognised for F.R.C.S. Duties including work in area Casualty Department at Battle Hospital, Reading (300 Beds). Person appointed will work with Registrar and House Officers.

Apply, stating nationality, present post, and qualifications with dates, together with names of 2 referees, to Group Secretary, 3, Craven-road, Reading.

READING. BATTLE HOSPITAL. (391 Beds.) Applications are invited from registered medical practitioners for the post of RESIDENT JUNIOR HOUSE SURGEON in the Accident and Orthopædic Department. Post vacant 1st August. F.R.C.S. recognised. Also casualty duties.

Apply, stating age, qualifications with dates, nationality, present post, with 1 copy of recent testimonial, to Hospital Secretary.

READING. ROYAL BERKSHIRE HOSPITAL. (398 Beds.) READING AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered and provisionally registered medical practitioners for the resident post of HOUSE PHYSICIAN in the Paediatric Department, vacant 1st September, 1957, and tenable for 6 months.

Write, stating age, qualifications with dates, nationality, present post, with copy of 1 recent testimonial, to Secretary.

ROCHDALE AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. BIRCH HILL HOSPITAL. Pre-registration HOUSE OFFICER (obstetrics and gynæcology) required. Recognised for the D.Obst.R.C.O.G.

Apply to the Group Secretary, Central Offices, Birch Hill Hospital, Rochdale.

ROCHDALE AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (medicine) (Assistant Resident Medical Officer rank) required at Birch Hill General Hospital. Medical residents include Resident Medical Officer and 3 House Physicians.

Apply at once to Group Secretary, Central Offices, Birch Hill Hospital, Rochdale, Lancs.

ROCHDALE AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. HOUSE PHYSICIANS (pre- or post-registration) required for Birch Hill General Hospital. Posts offer wide experience in general medicine. Staff of 5 residents in the medical department.

Apply at once to Group Secretary, Central Offices, Birch Hill Hospital, Rochdale, Lancs.

ROCHDALE AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEONS (pre- or post-registration) required for Birch Hill Hospital and Rochdale Infirmary. 2 resident posts available. Duties consist of 2 months casualty and 4 months general surgery. Recognised for 6 months F.R.C.S. experience.

Apply at once to Group Secretary, Central Offices, Birch Hill Hospital, Rochdale, Lancs.

ROCHFORD, ESSEX. GENERAL HOSPITAL. Locum SENIOR HOUSE OFFICER (general medicine) required at the above Hospital for the period 3rd–20th August, 1957, inclusive.

Applications, giving age, qualifications, to the undersigned as soon as possible. J. C. FIELD, Secretary.

ROMFORD, ESSEX. OLDCHURCH HOSPITAL. (722 Beds.) RESIDENT HOUSE PHYSICIAN required from 24th July, 1957. Open to either pre-registration applicants or to fully qualified practitioners.

Apply immediately to Group Secretary, Romford Group Hospital Management Committee, Oldchurch Hospital.

ROMFORD ESSEX. OLDCHURCH HOSPITAL. (722 Beds.) ORTHOPÆDIC HOUSE SURGEON (resident) required in the Orthopædic and Accident Unit immediately. The service consists of 100 beds equally divided between traumatic surgery and "cold" orthopædics. Post is recognised for pre-registration purposes and for F.R.C.S.

Applications to be sent to Group Secretary, Romford Hospital Management Committee, Oldchurch Hospital.

ROMFORD, ESSEX. VICTORIA HOSPITAL. (99 Beds.) RESIDENT HOUSE SURGEON (Male) required immediately. (Not pre-registration appointment.)

Applications should be forwarded to the Secretary, Romford Group Hospital Management Committee, Oldchurch Hospital, Romford.

SCOTLAND. SOUTH-EASTERN REGIONAL HOSPITAL BOARD. SENIOR REGISTRAR in Department of Surgical Neurology, Edinburgh, vacant on 27th September, 1957.

Apply, giving particulars of age, qualifications and previous experience, and the names of 3 referees, to the Secretary, 11, Drumsheugh-gardens, Edinburgh, 3, by 15th August, 1957.

SCOTLAND. SOUTH-EASTERN REGIONAL HOSPITAL BOARD. REGISTRAR to the South-Eastern Regional Orthopædic Service, vacant on 17th October, 1957. The duties will be mainly confined to the Royal Infirmary of Edinburgh and the Princess Margaret Rose Hospital.

Apply, giving particulars of age, previous experience, and qualifications, together with the names of 2 referees, to the Secretary, 11, Drumsheugh-gardens, Edinburgh, 3, by 17th August, 1957. Further particulars can be obtained on application.

SCOTLAND. SOUTH-EASTERN REGIONAL HOSPITAL BOARD. Applications are invited for the post of REGISTRAR to the Royal Edinburgh Hospital for Mental and Nervous Disorders. During tenure of post opportunities for study and interchange of duty and training at other centres in the Region may be available under joint training scheme of South-Eastern Regional Hospital Board and Department of Psychological Medicine of the University of Edinburgh. Single accommodation available. The Hospital may be visited by arrangement with the Physician-Superintendent.

Apply, giving particulars of age, qualifications and previous experience, and the names of 2 referees, to the Secretary, 11, Drumsheugh-gardens, Edinburgh, 3, within 14 days.

SCOTLAND. SOUTH-EASTERN REGIONAL HOSPITAL BOARD. REGISTRAR in Surgery at Bangour Hospital, Broxburn, vacant on 1st October, 1957. Single accommodation available.

Apply, giving particulars of age, qualifications and previous experience, and the names of 2 referees, to the Secretary, 11, Drumsheugh-gardens, Edinburgh, 3, by 17th August, 1957.

SCOTLAND. SOUTH-EASTERN REGIONAL HOSPITAL BOARD. REGISTRAR at Bangour Village Hospital, Broxburn, West Lothian, vacant on 1st October, 1957. During the tenure of the post opportunities for interchange of duty and training at other centres in the Region may be available under the joint training scheme of the South-Eastern Regional Hospital Board and the Department of Psychological Medicine of the University of Edinburgh.

Apply, giving particulars of age, qualifications and previous experience, and the names of 2 referees, to the Secretary, 11, Drumsheugh-gardens, Edinburgh, 3, by 17th August, 1957.

SCOTLAND. SOUTH-EASTERN REGIONAL HOSPITAL BOARD. REGISTRAR at Stratheden Hospital, Cupar, Fife. During the tenure of the post opportunities for interchange of duty and training at other centres in the Region may be available under the joint training scheme of the South-Eastern Regional Hospital Board and the Department of Psychological Medicine of the University of Edinburgh. The successful candidate will be required to spend part of his time in the Children's Unit which is under formation. Residence is available.

Apply, giving particulars of age, qualifications and previous experience, and the names of 2 referees, to the Secretary, 11, Drumsheugh-gardens, Edinburgh, 3, by 17th August, 1957.

SCOTLAND. SOUTH-EASTERN REGIONAL HOSPITAL BOARD. REGISTRAR in Radio-diagnosis at the Edinburgh Northern Group of hospitals. The work will be mainly at the Western General Hospital.

Apply, giving particulars of age, qualifications and previous experience, and the names of 2 referees, to the Secretary, 11, Drumsheugh-gardens, Edinburgh, 3, by 17th August, 1957.

SCOTLAND. SOUTH-EASTERN REGIONAL HOSPITAL BOARD. SENIOR REGISTRAR in Surgery at the Royal Infirmary of Edinburgh, vacant on 1st October, 1957.

Apply, giving particulars of age, qualifications and previous experience, and the names of 3 referees, to the Secretary, 11, Drumsheugh-gardens, Edinburgh 3, by 17th August, 1957.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the following appointments, which will be for 1 year in the first instance :—

REGISTRAR in Surgery based at Law Hospital, Carluke.
REGISTRAR in Surgery based at the Royal Alexandra Infirmary, Paisley.
REGISTRAR in Pathology based at Dumfries and Galloway Royal Infirmary, Dumfries.
REGISTRAR in Pathology based at the Victoria Infirmary, Glasgow.

Applications (12 copies), stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, C.2, by 3rd August, 1957.

SCUNTHORPE AND DISTRICT WAR MEMORIAL HOSPITAL. (262 Beds. Recognised for the F.R.C.S.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT SURGICAL REGISTRAR required. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 29th July, giving age, nationality, qualifications, present and previous appointments with dates naming 3 referees.

SHEFFIELD. CITY GENERAL HOSPITAL. (652 Beds. Recognised for the D. Path.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time NON-RESIDENT REGISTRAR (pathology) required with duties at other hospitals in the Sheffield area. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 29th July, 1957, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

SHEFFIELD NATIONAL CENTRE FOR RADIOTHERAPY. SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time NON-RESIDENT SENIOR HOUSE OFFICER or REGISTRAR in Radiotherapy required. (Possession of a higher qualification in Medicine or Surgery or the D.M.R.(T.) Part I would qualify for appointment of Registrar.) Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 29th July, 1957, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

SHEFFIELD. KING EDWARD VII ORTHOPÆDIC HOSPITAL, Rivelin Valley-road. (154 Beds.) SHEFFIELD NO. 3 HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the post of SENIOR HOUSE OFFICER (resident) at the above Hospital. The post, which is normally held for 1 year in the first instance, will be subject to the terms and conditions of service for hospital medical staff. Salary £819 10s. p.a. Emolument charge £150 p.a.

Applications, with names of 2 referees, to Group Secretary, Sheffield No. 3 Hospital Management Committee, Lodge Moor Hospital, Sheffield, 10.

SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time NON-RESIDENT SENIOR REGISTRAR (psychiatry) required for duties at the Towers Hospital, Leicester, and at the Children's Psychiatric Clinics in Leicester and Leicestershire. Possession of D.P.M. essential. Appointment for 1 year in first instance reviewable annually.

Application forms and further details from Senior Administrative Medical Officer, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield. Forms to be returned by 8th August, 1957.

SHREWSBURY. CROSS HOUSES HOSPITAL. Obstetric HOUSE SURGEON (pre-registration post), vacant immediately.

Applications, with copy testimonials, to Group Secretary, Shrewsbury Hospital Group, Royal Salop Infirmary, Shrewsbury.

SHREWSBURY. SHELTON MENTAL HOSPITAL. (1000 Beds.) SHREWSBURY HOSPITAL GROUP. JUNIOR HOSPITAL MEDICAL OFFICER. Appointment for 1 year in first instance. Residential accommodation available. Recognised for D.P.M.

Applications to Medical Superintendent.

SLOUGH, BUCKINGHAMSHIRE. UPTON HOSPITAL. WINDSOR GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications invited for the post of HOUSE PHYSICIAN, vacant 11th August. Pre-registration post. Appointment offers considerable experience in general acute medical work.

Applications, with names of 2 referees, to Secretary, by 26th July.

SLOUGH, BUCKINGHAMSHIRE. UPTON HOSPITAL. WINDSOR GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications invited for post of HOUSE SURGEON, 1 of 2, vacant 11th August. Pre-registration post.

Applications, with names of 2 referees, to Secretary, by 26th July.

SOUTHAMPTON GENERAL HOSPITAL. (471 Beds. Recognised for the Membership and Diploma examinations of the R.C.O.G.) RESIDENT HOUSE SURGEON (pre-registration) to the Gynæcological and Obstetric Unit required end August.

Applications, with copies of recent testimonials, should be forwarded as soon as possible to the Group Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

SOUTHAMPTON GENERAL HOSPITAL. (471 Beds.) RESIDENT HOUSE PHYSICIAN required mid-August. Pre-registration candidates eligible.

Applications, with copies of testimonials, should be forwarded as soon as possible to the Group Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

SOUTHAMPTON. ROYAL SOUTH HANTS HOSPITAL. (274 Beds.) ORTHOPÆDIC HOUSE SURGEON (post recognised for Pre-registration Service and tenable for 6 months) and SENIOR HOUSE OFFICER (orthopædic). The Hospital is the centre to which all trauma from a large industrial town and port is directed thus providing excellent experience in the treatment of traumatic conditions; patients with orthopædic conditions are also drawn from a wide area.

Applications, with copies of testimonials, should be sent as soon as possible to the Group Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

SOUTHPORT GENERAL INFIRMARY. (189 Beds. Recognised for pre-registration and F.R.C.S.) HOUSE SURGEON (general surgery and gynæcology). Post vacant now.

Apply with 2 copy testimonials to Group Secretary, Southport and District Hospital Management Committee, Promenade Hospital, Southport.

SALFORD HOSPITAL MANAGEMENT COMMITTEE. ROYAL MANCHESTER CHILDREN'S HOSPITAL AND SALFORD ROYAL HOSPITAL. ANÆSTHETIST required (Senior House Officer status) to commence duty on 12th September, 1957, and to be resident at the Royal Manchester Children's Hospital, Pendlebury, with duties at Salford Royal Hospital. In addition to training in anæsthesia for general surgery both adult and children, special facilities are available for gaining experience in anæsthesia for neonatal, neurosurgical and other surgical specialties. The post is recognised for the F.F.A.R.C.S. and encouragement will be given to the successful candidate to work for this examination.

Applications, stating age, qualifications and experience, together with copies of 3 recent testimonials, to be forwarded to the Hospital Secretary, Royal Manchester Children's Hospital, Pendlebury, to be received not later than 10 days after appearance of this advertisement.

SALFORD. HOPE HOSPITAL. Salford Hospital Management COMMITTEE. Applications are invited for the posts, which become vacant on 27th July, 1957, at the above Hospital, of 3 RESIDENT HOUSE SURGEONS (general), pre- or post-registration. The posts are recognised for the F.R.C.S.

Applications, stating age, qualifications and experience, together with the names and addresses of 2 referees, should be forwarded to the Hospital Secretary immediately.

SALFORD ROYAL HOSPITAL. Salford Hospital Management COMMITTEE. Applications invited for the undermentioned pre-registration posts:—

HOUSE OFFICER (Casualty Department).

HOUSE OFFICER (Genito-urinary Department).

Applications, with copies of 2 recent testimonials, should be addressed to the Secretary, Salford Royal Hospital, Chapel-street, Salford 3.

SALISBURY GENERAL HOSPITAL. Applications are invited for the appointment of RESIDENT HOUSE SURGEON/HOUSE PHYSICIAN to run consecutively in this order from 19th August, 1957, for a period of 6 months in each post. The post is open to pre-registration candidates.

Apply, naming 2 referees, to Group Secretary, Salisbury Group Hospital Management Committee, Odstock Hospital, Salisbury.

ST. HELENS AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. The following Resident House Officer posts become vacant on 1st September, 1957.

St. Helens Hospital (196 Beds)
HOUSE SURGEON.

Whiston Hospital, Prescot (892 Beds)
HOUSE SURGEON.

The posts are recognised for Pre-registration Service and for the F.R.C.S. examinations.

Applications, stating age, date of qualification and experience, and giving 2 names for reference, should be forwarded to the Group Secretary, Whiston Hospital, Prescot, Lancs, immediately. Please state for which post application is made.

ST. HELENS AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. ECCLESTON HALL HOSPITAL (75 Beds), DELPH LANE HOSPITAL, WHISTON (34 Beds). Applications are invited from fully or provisionally registered practitioners for the appointment of HOUSE PHYSICIAN to Eccleston Hall and Delph Lane Hospitals. The appointment may be made in the grade of Senior House Officer, dependent on the qualifications and experience of the applicant. The appointment is approved as a Pre-registration Service post. The person appointed will work under the supervision of the Consultant Chest Physician for the Group. The work comprises all types of tuberculosis and includes chest clinic work. Good residential accommodation for a single person, male or female, is available. The post may be non-resident, subject to residence within reasonable distance from the Hospitals.

Applications to be forwarded to—
N. RICHARDS, Group Secretary.
Whiston Hospital, Prescot.

ST. ALBANS (near), HERTFORDSHIRE. SHENLEY HOSPITAL. Applications are invited for the post of SENIOR HOUSE OFFICER (Psychiatrist), resident or non-resident, for 1 year in the first instance, at Shenley Hospital, 16 miles from London. Opportunity for work with neurotic as well as psychotic patients. The Hospital may be visited by appointment.

Applications to the Medical Superintendent.

STOCKPORT AND BUXTON HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the following posts, which are approved for pre-registration purposes.

Stockport Infirmary (163 Beds)

HOUSE OFFICER (general surgery and gynæcology). Recognised for the F.R.C.S. Vacant 21st August, 1957.

HOUSE OFFICER (general surgery and ophthalmology). Recognised for the F.R.C.S. and D.O.M.S. Vacant 11th September, 1957.

Applications, with copies of 2 testimonials, to the Group Secretary, 59B, Shaw-heath, Stockport.

STOKE-ON-TRENT. NORTH STAFFORDSHIRE ROYAL INFIRMARY. (455 Beds.) HOUSE OFFICER (general surgery) required. Pre-registration post. Hospital recognised for F.R.C.S.

Detailed applications, with copy testimonials, to Group Secretary, Hospital Management Committee, Princes-road, Stoke-on-Trent.

STOKE-ON-TRENT. NORTH STAFFORDSHIRE ROYAL INFIRMARY. HOUSE PHYSICIAN (general medicine) with dermatology, vacant July. Pre-registration post.

Detailed applications, with copy testimonials, to Group Secretary, Hospital Management Committee, Princes-road, Stoke-on-Trent.

STOKE-ON-TRENT. ORTHOPÆDIC HOSPITAL, HARTSHILL, STOKE-ON-TRENT. (78 Beds.) SENIOR HOUSE OFFICER (orthopædics) required. Post vacant 7th September. Duties also at North Staffordshire Royal Infirmary.

Detailed applications, with copy testimonials, to Group Secretary, Hospital Management Committee, Princes-road, Stoke-on-Trent.

SWINDON AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. Applications invited for the appointment of SENIOR HOUSE OFFICER as Casualty Officer and Orthopædic House Surgeon at Great Western Hospital, Swindon. Post recognised by R.C.S. for 6 months of years training under Fellowship regulations. Work of Accident and Orthopædic Department, associated with Nuffield Orthopædic Centre (Wingfield Morris Orthopædic Hospital), Oxford, includes large number of industrial injuries. Salary £819 10s. p.a., less charge for residential emoluments.

Full details and names of 3 referees to Secretary, 7, Okus-road, Swindon, Wilts, immediately.

SWINDON AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. Applications invited for post of HOUSE OFFICER in Gynæcological Department at St. Margaret's Hospital, Swindon. Vacant 31st July. Post is tenable for 6 months. Offers good experience and is recognised for the M.R.C.O.G. By arrangement the appointment can be followed by further 6 months post in the Obstetric Department.

Applications to Secretary, 7, Okus-road, Swindon, as soon as possible.

TAUNTON AND SOMERSET HOSPITAL. Applications are invited for the post of SENIOR HOUSE OFFICER (casualty and orthopædic), vacant now.

Applications, stating age, nationality and qualifications together with the names of 2 referees, should be forwarded to the Group Secretary, Taunton Hospital Management Committee, Taunton and Somerset Hospital, Musgrove Park Branch, Taunton, Somerset.

TAUNTON AND SOMERSET HOSPITAL. Applications are invited for HOUSE OFFICER (general surgery). Post vacant July, 1957. Recognised for pre-registration candidates, and F.R.C.S.

Applications, stating age, nationality and qualifications, together with the names of 2 referees, should be forwarded to the Group Secretary, Taunton Hospital Management Committee, Musgrove Park Hospital, Taunton, Somerset.

WAKEFIELD. PINDERFIELDS GENERAL HOSPITAL. Applications invited from registered medical practitioners for post of JUNIOR HOSPITAL MEDICAL OFFICER in Anæsthetics (recognised for D.A. and F.F.A.R.C.S.). The post offers wide experience, as large Orthopædic and Thoracic Units are located in the Hospital in addition to the general surgical and gynæcological wards. Appointment may be either resident or non-resident. If resident, a charge at the rate of £170 p.a. will be made.

Address written applications, stating age, nationality, qualifications with dates, experience, details of previous appointments, and 2 names and addresses for reference, to—
W. BOWRING, Group Secretary.
Pinderfields General Hospital, Wakefield.

WAKEFIELD. PINDERFIELDS GENERAL HOSPITAL. SENIOR HOUSE OFFICERS required for the following Departments :—

(*a*) ORTHOPÆDIC SURGERY DEPARTMENT.
(*b*) THORACIC SURGERY DEPARTMENT.
(*c*) GYNÆCOLOGICAL DEPARTMENT.

Salary £819 10s. p.a. £150 p.a. charged for accommodation.

Address written applications, giving full particulars of experience and 2 names and addresses for reference, to—

W. BOWRING, Group Secretary.

Pinderfields General Hospital, Wakefield.

WAKEFIELD. CLAYTON HOSPITAL. (207 Beds.) HOUSE SURGEON (general surgery, gynæcology and dentistry) required. Approved pre-registration appointment recognised for F.R.C.S. Post vacant 1st August, 1957.

Applications to the Group Secretary, Hospital Management Committee No. 9 Wakefield A Group, 113, Northgate, Wakefield.

WAKEFIELD. GENERAL HOSPITAL, Park Lodge-lane. (158 Beds.) HOUSE PHYSICIAN (general medicine and geriatrics) required. Approved pre-registration appointment. Post vacant 1st August, 1957.

Applications to the Group Secretary, Hospital Management Committee No. 9 Wakefield A Group, 113, Northgate, Wakefield.

WALLASEY, CHESHIRE. VICTORIA CENTRAL HOSPITAL. Applications are invited for the post of CASUALTY OFFICER which is approved by the Royal College of Surgeons of England as a training post for the Final examination of F.R.C.S. The Casualty Department is newly built and comprises Minor Operating Theatre, plaster room, recovery rooms, examination rooms, dressings rooms, &c. The post may be resident or non-resident. Junior Hospital Medical Officer grade. Salary scale £852 10s.–£1182 10s. in accordance with M.D.B. Circular No. 29.

Applications, giving nationality, age, qualifications and experience, to the Group Secretary, North Wirral Hospital Management Committee, Victoria Central Hospital, Wallasey, immediately.

WALSALL HOSPITAL MANAGEMENT COMMITTEE. MANOR HOSPITAL. (333 Beds.) GYNÆCOLOGICAL AND OBSTETRIC HOUSE SURGEON. Post recognised for D.Obst.R.C.O.G. Vacancy 1st September.

Applications to Group Secretary, General (Sister Dora) Hospital, Walsall.

WALSALL HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEONS required, recognised pre-registration.

Apply, with names of 3 referees, to Group Secretary, Walsall General (Sister Dora) Hospital.

WELSH REGIONAL HOSPITAL BOARD. Whole-time Locum Tenens SENIOR REGISTRAR (general surgery), required Maelor General Hospital immediately for approximately 5 months.

Applications, naming 2 referees, to Senior Administrative Medical Officer, Temple of Peace, Cathays Park, Cardiff.

WELSH REGIONAL HOSPITAL BOARD/UNITED CARDIFF HOSPITALS.

SENIOR REGISTRAR in Anæsthetics. Successful candidate will work as member of the Department of Anæsthetics, Cardiff, partly in the Teaching Hospital and partly in other hospitals in Cardiff. Duties will include undergraduate teaching and assistance with research. Subject to review annually.

REGISTRAR in Anæsthetics. The successful candidate will work as a member of the Department of Anæsthetics in Cardiff, partly in the Teaching Hospital and partly in other hospitals in Cardiff. Non-resident. Subject to review end of first year.

Application forms from Senior Administrative Medical Officer, Temple of Peace, Cathays Park, Cardiff, within 14 days.

WELSH REGIONAL HOSPITAL BOARD.

REGISTRAR (anæsthetics), Mid Glamorgan Hospital Management Committee. Successful candidate will be based at Neath General Hospital (412 Beds). Hospital recognised for F.F.A.R.C.S. Resident/non-resident.

REGISTRAR (general medicine), based at Swansea Hospital, to serve Glantawe Hospital Management Committee. Non-resident.

Subject to review end of first year.

Application forms from Senior Administrative Medical Officer, Temple of Peace, Cathays Park, Cardiff, within 14 days.

WHITEHAVEN HOSPITAL, Cumberland. (119 Beds and Annexe of 31 Beds.) HOUSE OFFICER (obstetrical and gynæcological), House Officer or Senior House Officer grade. Vacant beginning of August.

Detailed applications, with dates, and names of 2 referees, to the Group Secretary, Workington Infirmary, Cumberland.

WOLVERHAMPTON GROUP. The Royal Hospital. JUNIOR PATHOLOGIST required. Salary in Junior Hospital Medical Officer grade. Comprehensive service offering wide experience and training. Experience in specialty an advantage. Resident or partly resident. Post vacant shortly. Candidates may visit the Pathologist.

Applications to Group Secretary, The Royal Hospital, Wolverhampton, by 27th July, 1957.

WORCESTER ROYAL INFIRMARY. House Surgeon (pre-registration or otherwise) required immediately for Orthopædic Department of this busy general hospital of 213 Beds. The appointment offers wide and varied experience.

Applications to Hospital Secretary.

WORCESTER ROYAL INFIRMARY. (213 Beds.) House SURGEON (pre-registration or otherwise) required beginning August, for general surgery post at this busy, acute Hospital. The appointment offers wide and varied experience and is recognised for the F.R.C.S. examinations.

Applications to Hospital Secretary.

WORCESTER (near). POWICK HOSPITAL. Locum SENIOR HOUSE OFFICER required for several months.

Applications, with copies of testimonials, to Medical Superintendent.

WORKINGTON INFIRMARY, Cumberland. (155 Beds. Pre-registration post. Recognised F.R.C.S. (Ed.).) HOUSE SURGEON (first, second, or Senior House Officer post), vacant end of July.

Detailed applications, with dates and names of 2 referees, to Secretary.

IBADAN, NIGERIA. UNIVERSITY COLLEGE HOSPITAL. DEPARTMENT OF MEDICINE.

(*a*) SENIOR REGISTRAR.
(*b*) REGISTRAR.
(*c*) SENIOR REGISTRAR or REGISTRAR (tuberculosis).

The Board of Management invite applications from registered medical practitioners for the above appointments in the newly completed Hospital of 500 Beds. The building is on the most modern lines. The Department of Medicine contains 120 Beds : there is also a well-equipped outpatient clinic. There is great variety in the clinical conditions encountered and much room for original work, the departmental facilities for which are excellent.

The salaries offered for the posts are :—

Senior Registrar : first year £1428 p.a., second year £1482 p.a., third year £1542 p.a., fourth year £1596 p.a.

Registrar : first year £1164 p.a., second year £1212 p.a.

In addition, an inducement allowance is payable to an expatriate doctor of £270 p.a. on salary less than £1285 p.a. or £300 where the salary exceeds £1285 p.a.

The appointment will be initially for 1 tour of 12 months, and will be renewable by mutual agreement for a further tour of 12 months.

On satisfactory completion of the agreement, a gratuity of £37 10s. will be paid for each completed term of 3 months service.

An outfit allowance of £60 is payable on first appointment.

Partly furnished quarters are provided at a rental of 8½% of salary excluding inducement allowance, and an expatriate officer appointed will be eligible for 7 days leave on full pay for each completed month of service in Nigeria.

Free first-class passages are provided for expatriate doctors and their wives on first appointment and on completion of their agreement. Free first-class passages to Nigeria will, in certain circumstances, be provided for non-expatriate doctors. Leave privileges for Nigerian Registrars follow closely those granted to expatriate doctors.

Arrangements can be made to enable doctors to continue their National Health Service superannuation scheme, contributions and details of the revised salary and gratuity payable in such cases will accompany application forms.

Applications should be submitted not later than 3rd August, 1957, on the appropriate forms which will be forwarded, together with additional information, on receipt of an addressed foolscap envelope by the Adviser on Staff Recruitment, London Office, University College Hospital, Ibadan, 57, Catherine-place, Palace-street, London, S.W.1.

IBADAN, NIGERIA. UNIVERSITY COLLEGE HOSPITAL. DEPARTMENT OF OBSTETRICS AND GYNÆCOLOGY.

(*a*) SENIOR REGISTRAR.
(*b*) REGISTRAR/SENIOR HOUSE OFFICER.

The Board of Management invite applications from medical practitioners with the requisite postgraduate experience and qualifications for the above posts in the newly completed Hospital.

The salaries offered for these posts are :—

Senior Registrar : £1428 p.a. rising by 3 annual increments to £1596 p.a., plus an inducement allowance payable to an expatriate doctor, of £300 p.a.

Registrar : £1164 p.a. first year, rising to £1212 p.a. in the second year, plus an inducement allowance, payable to an expatriate doctor, of £270 p.a.

Senior House Officer : £1116 p.a. plus an inducement allowance, payable to an expatriate doctor, of £270 p.a.

The Senior Registrar must hold the M.R.C.O.G.

Registrars and Senior House Officers must already have held resident appointments in medicine, surgery and obstetrics.

Candidates insufficiently qualified for Registrar may be offered an appointment as Senior House Officer.

The Senior Registrar appointment will be initially for 1 tour of 12 months, renewable by mutual agreement for up to 3 further tours of 12 months each. The Registrar appointment will initially be for 1 tour of 12 months and will be renewable by mutual agreement for a further tour of 12 months. The Senior House Officer appointment will be for 1 tour of 12 months.

On satisfactory completion of the agreement a gratuity of £37 10s. will be paid for each completed period of 3 months service.

An outfit allowance of £60 is payable on first appointment.

Partly furnished quarters are provided at a rental of 8½% of salary, excluding inducement allowance. The Senior Registrars and Registrars will be eligible for 7 days leave in the United Kingdom on full pay for each completed month of service in Nigeria. Expatriate Senior House Officers are entitled to leave on the same scale but Nigerian Senior House Officers are entitled to 5 days leave, to be spent in Nigeria, in respect of each completed month of service.

Free first-class passages to and from Nigeria are provided for expatriate doctors and their wives on first appointment, vacation leave and on completion of agreement. Free first-class passages to Nigeria will also be provided for Nigerian doctors on first appointment.

Candidates will be eligible for children's allowances in accordance with existing regulations.

Arrangements can be made to enable doctors to continue their National Health Service superannuation scheme contributions, and details of the revised salary and gratuity payable in such cases will accompany application forms.

Applications should be submitted not later than 3rd August, 1957, on the appropriate forms, which will be forwarded together with further information, on receipt of an addressed foolscap envelope, by the Adviser on Staff Recruitment, London Office, University College Hospital, Ibadan, 57, Catherine-place, London, S.W.1.

WIGAN AND LEIGH HOSPITAL MANAGEMENT COMMITTEE.

Royal Albert Edward Infirmary, Wigan

3 HOUSE SURGEONS.
HOUSE PHYSICIAN.

Leigh Infirmary

HOUSE SURGEON.

All pre-registration posts—becoming vacant shortly.

Applications, with names of 2 referees, to the Secretary, Knowsley House, Wigan.

YORK MILITARY HOSPITAL (Civilian Wing). (60 Beds.) SENIOR HOUSE OFFICER required from 10th August, 1957, resident or non-resident. There are 30 general surgical beds and 30 medical beds. The Hospital is associated with the County Hospital (General Hospital of 269 Beds) where relief casualty and emergency work and relief work for House Surgeons may be undertaken and where residence can be provided. Salary £819 10s. p.a., less £150 p.a. if resident.

Applications, stating age, nationality, experience, qualifications, and names of 2 referees, to Group Secretary, York A and Tadcaster Hospital Management Committee, Bootham Park, York, immediately.

U.S.A. CAMBRIDGE, MASSACHUSETTS. Applications are invited for the positions of RESIDENCIES in Anesthesia for a 2-year period beginning 1st July and 1st September, 1957. Salary $1800 first year and $3600 second year and full maintenance. Training in all branches of anesthesia. Affiliation with other hospitals.

Applications, stating age, nationality, qualifications, and experience, together with the names of their referees, should be forwarded to the Director of Anesthesiology, P.O. Box 89, Cambridge, Massachusetts. Travelling expenses to and from the U.S.A. will be paid. Particulars will be sent as soon as application is received. Please enclose recent photograph with application.

Public Appointments

BILSTON BOROUGH COUNCIL. Staffordshire County COUNCIL. Applications are invited for the separate part-time appointments of MEDICAL OFFICER OF HEALTH of the Borough of Bilston, and ASSISTANT COUNTY MEDICAL OFFICER AND SCHOOL MEDICAL OFFICER. The appointments together will constitute whole-time, the allocations being 6 half-days and 5 half-days respectively.

The proportionate salary for each appointment is calculated in accordance with the latest agreed scale, and increments will be given for previous service in the same capacity, the ranges being :—

Bilston Borough Council: £1003 12s. 8d.–£30 (4)–£1123 12s. 8d.

County Council: £596 11s. 10d.–£28 8s. 2d. (3)–£31 5s. 0d. (5)–£838 1s. 4d.

A car will be an advantage and an appropriate allowance will be paid. The posts are superannuable, and the successful candidate must pass a medical examination and produce his birth certificate. Applicants must be fully qualified medical practitioners with experience in public health duties, and must hold the Diploma in Public Health or its equivalent. The candidate appointed will be expected to reside in Bilston as regards the County Council duties, act under the direction of the County Medical Officer of Health, and will be required to perform such duties as may from time to time be prescribed. As regards the duties of Medical Officer of Health, he will be subject to the Sanitary Officers (outside London) Regulations, 1935 and 1951, and to the sole control and direction of the Borough Council. The County Council appointment will be subject to 3 calendar months notice in writing on either side.

Forms of application may be obtained from the County Medical Officer, County Buildings, Stafford, and should be returned to him not later than by first post on 27th July, 1957.

A. M. WILLIAMS, Town Clerk, Bilston.
T. H. EVANS, Clerk of the County Council.

BIRMINGHAM. CITY OF BIRMINGHAM. Public HEALTH DEPARTMENT. Applications invited from registered medical practitioners for post of ASSISTANT ADMINISTRATIVE MEDICAL OFFICER OF HEALTH (Male or Female). Candidates should hold the Diploma in Public Health. The successful candidate will have an opportunity to gain administrative experience in all branches of the Public Health Service, including maternity and child welfare. Salary scale £1405–£55–£1625 p.a. Commencing salary within the scale will depend upon the Medical Officer's experience. Pension scheme (including Widows and Orphans); medical examination. The officer appointed will be required to devote his/her whole-time to official duties and the appointment will be subject to 3 months notice on either side.

Applications, with the names of 3 persons to whom reference may be made, to be sent to the Medical Officer of Health, Council House, Birmingham, 3, not later than 8th August, 1957.

COVENTRY CORPORATION require School Medical OFFICER AND ASSISTANT MEDICAL OFFICER OF HEALTH (joint post) for duties connected with medical inspection and clinic treatment of school children, maternity and child welfare work and such other duties as the Medical Officer of Health and Principal School Medical Officer may include from time to time. Qualifications/experience in ascertainment of handicapped pupils an advantage. Salary £1050–£1475. Commencing salary according to experience/qualifications.

Applications and full particulars to Medical Officer of Health, New Council Offices, Coventry, without delay.

FACTORY DOCTORS. Factories Acts, 1937 and 1948. The following appointments as Appointed Factory Doctor are vacant. Apply to Chief Inspector of Factories, 19, St. James's-square, London, S.W.1.

District	*County*	*Latest date for receipt of applications*
CALDICOT ..	MONMOUTH ..	3RD AUGUST, 1957
MALPAS ..	CHESTER ..	3RD AUGUST, 1957

DERBYSHIRE COUNTY COUNCIL. Applications are invited from Male medical practitioners for the whole-time appointment of SENIOR ASSISTANT MEDICAL OFFICER. Possession of the D.P.H. (or its approved equivalent) is essential and experience in school health and mental deficiency work is advantageous. The work will be largely administrative in connection with the Public Health and School Health Services but other duties may be assigned to the Officer appointed, who will work under the direction of the County Medical Officer. Office accommodation will be provided in the Central Office. The salary is £1210–£55(5)–£50(4)–£1685 p.a., together with a travelling allowance.

Applications should be submitted to the undersigned by 31st July, 1957. Application forms are not provided, but the conditions of service will be supplied on request.

J. B. S. MORGAN, County Medical Officer of Health.
County Offices, St. Mary's Gate, Derby.

DUBLIN. CORPORATION OF DUBLIN. Vacancy for Temporary REGISTRAR in connection with surgical work at St. Mary's Chest Hospital, Phoenix Park, Dublin. Applications are invited from medical practitioners for the above post. Salary: £862 10s. for the first year, £969 for the second year, £1075 10s. for the third year. (Allowance of £106 10s. p.a. payable for certain higher qualifications.) Credit will be given for salary purposes for previous experience as Registrar. A deduction of £159 p.a. will be made for emoluments provided in kind.

Application forms and full particulars may be obtained from the Establishment Department, City Hall, Dublin. Latest date for receipt of applications 13th August, 1957.

JOHN P. KEANE, City Manager and Town Clerk.
City Hall, Dublin, 11th July, 1957.

GATESHEAD. COUNTY BOROUGH OF GATESHEAD. ASSISTANT MEDICAL OFFICER OF HEALTH AND SCHOOL MEDICAL OFFICER (Male). Applications are invited from duly qualified medical practitioners (Male) in possession of the D.P.H., C.P.H., or D.C.H., for the post of Assistant Medical Officer in the Public Health Department. Salary will be within the scale commencing £1050–£50–£1200–£55–£1475 p.a., having regard to the experience of the candidate in similar posts. The appointment is superannuable, subject to medical examination, and is terminable by 1 months notice on either side.

A list of the duties of the office may be obtained from the Medical Officer of Health, Greenesfield House, Mulgrave-terrace, Gateshead, to whom applications, stating age and experience, and accompanied by not more than 3 recent testimonials, should be sent in envelopes endorsed "Assistant Medical Officer," within 14 days of the appearance of this advertisement.

C. D. JACKSON Town Clerk.
Town Hall, Gateshead, 8, 11th July, 1957.

GOVERNMENT OF JAMAICA. Medical Officers with qualifications registrable in United Kingdom required as follows :—

(*a*) Doctors who have completed 1 years House appointment to assist Medical Officer in charge of district hospital or a Specialist at Kingston Public Hospital (540 Beds) in general surgery and medicine, pædiatrics, ear, nose and throat, eye, casualty (rotation service).

(*b*) Doctors with 3 or 4 years approved experience following graduation for duties as above but with more responsibility. May also be assigned for duty in psychiatry at Bellevue (Mental) Hospital (3000 Beds).

(*c*) Doctors between 45 and 50 years of age with more than 4 years approved experience for general duty at Kingston Public Hospital or as Medical Officer in districts to hold regular clinics and have medico-legal responsibilities and perform post mortems.

Appointments on contract for 3 years in first instance with possibility of eventual pensionable employment. Salary scale £900–£1600 a year. Starting salary depends on experience. On satisfactory completion of service a gratuity (taxable) of £25 to £37 10s. is payable for each completed 3 months service. (Not payable if officer is placed on pensionable establishment.) Free passages for Officer, wife, and dependent children under 18 years, not exceeding 5 persons in all. Quarters not provided but subsidy is payable where rents exceed 10% of salary. Income-tax at local rates. Climate healthy. Educational facilities available.

Application forms from Director of Recruitment, Colonial Office, London, S.W.1 (quoting No. BCD. 117/32/023).

LUTON. BOROUGH OF LUTON. Assistant Medical OFFICER. Applications are invited for this appointment. Salary scale: £1050–£50–£1200–£55–£1475. Commencing salary within the scale will be commensurate with qualifications and experience. Car allowance payable. Preference will be given to applicants possessing a Diploma in Public Health. Duties will include work in connection with School Health Services, hospital treatment of infectious diseases, and Part III Personal Health Services.

Full particulars and conditions of appointment obtainable from the Medical Officer of Health, Public Health Department, 63/69, Guildford-street, Luton, to whom applications should be delivered by 6th August, 1957.

Town Hall, Luton. A. D. HARVEY, Town Clerk.

MANCHESTER. CITY OF MANCHESTER HEALTH DEPARTMENT. MEDICAL OFFICERS (maternity and child welfare). Applications are invited from registered medical practitioners (Male or Female) for the above positions on the permanent staff. Applicants should have obstetric and pædiatric experience and will be required to undertake duties principally in Maternity and Child Welfare Clinics. Possession of the D.Obst.R.C.O.G., D.P.H., or D.C.H. qualifications will be an advantage. Salary scale £1050 rising to £1475 p.a. The appointment is subject to a medical examination and the City Council's conditions of service.

Application forms obtained on request, must be returned to the Town Clerk, Town Hall, Manchester, 2, and not to any member of the Council, within 21 days of the appearance of this advertisement. Envelopes must be endorsed "Medical Officer, Nursing Services Division." Canvassing is prohibited.

HER MAJESTY'S OVERSEAS CIVIL SERVICE. Trinidad. MEDICAL OFFICERS (Grade B) (Institutions) required for general medical, surgical and other duties of Hospital Medical Officer in any Institution in the Colony. Candidates must possess qualifications registrable in United Kingdom, and, either a higher qualification, or, more than 6 years approved post-registration experience. Salary scale £1400–£1500 p.a. Appointments on permanent basis with pension (non-contributory) or on short-term contract with gratuity (taxable) £25 to £37 10s. a quarter; or from National Health Service with retention of superannuation rights up to 6 years plus gratuity (taxable) of 20% of aggregate salary. (Only permanent officers are members of Her Majesty's Overseas Civil Service.) Quarters if available at low rental or allowance in lieu. Free passages on appointment for Officer and family not exceeding 5 persons in all. Leave passages on certain conditions up to 3 adult fares. Income-tax at local rates. Generous leave. Educational facilities.

Application forms from Director of Recruitment, Colonial Office, London, S.W.1 (quoting No. BCD. 117/38/05).

NOTTINGHAM. CITY OF NOTTINGHAM EDUCATION COMMITTEE. Applications are invited for the post of Whole-time SCHOOL MEDICAL OFFICER on the salary scale £1050 rising to £1475 p.a.

Further particulars and forms of application may be obtained from the Principal School Medical Officer, 28, Chaucer-street, Nottingham. W. G. JACKSON, Director of Education.

STAFFORDSHIRE COUNTY COUNCIL. Brownhills URBAN DISTRICT COUNCIL. Applications are invited for the separate part-time appointments of ASSISTANT COUNTY MEDICAL OFFICER AND SCHOOL MEDICAL OFFICER, and MEDICAL OFFICER OF HEALTH of the Brownhills Urban District. The appointments together will constitute whole-time, the allocations being 8 half-days and 3 half-days, respectively.

The proportionate salary for each appointment is calculated in accordance with the latest agreed scale and increments will be given for previous service in the same capacity, the ranges being :—

County Council : £835 4s. 7d.–£39 15s. 5d.–6d. (3)–£43 15s. (5)–£1173 5s. 11d.

Brownhills U.D.C. : £501 16s. 4d.–£15 (4)–£561 16s. 4d.

A car will be an advantage and an appropriate allowance will be paid. The posts are superannuable and the successful candidate must pass a medical examination and produce his birth certificate. Applicants must be fully qualified medical practitioners, with experience in public health duties, and must hold the Diploma in Public Health or its equivalent. The candidate appointed will, as regards the County Council duties, act under the direction of the County Medical Officer of Health and will be required to perform such duties as may from time to time be prescribed. As regards the duties of Medical Officer of Health, he will be subject to the Sanitary Officers (outside London) Regulations, 1935 and 1951, and to the sole control and direction of the Urban District Council. The County Council appointment will be subject to 3 calendar months notice in writing on either side.

Forms of application may be obtained from the County Medical Officer of Health, County Buildings, Stafford, and should be returned to him not later than by first post on 26th July, 1957.

T. H. EVANS, Clerk of the County Council.
N. WAINE, Clerk of the Brownhills Urban District Council.

County Buildings, Stafford, 4th July, 1957.

SURREY COUNTY COUNCIL. Child Guidance Clinics. Appointment of Part-time PSYCHIATRIST. Medical practitioners possessing the D.P.M. and who have had previous experience of child guidance work are invited to apply for vacancies in this service. Remuneration is at the rate of 5 guineas per session up to 6 sessions per week.

Applications, stating age, qualifications and experience to County Medical Officer, County Hall, Kingston upon Thames, from whom further particulars can be obtained.

WEST LOTHIAN. COUNTY COUNCIL OF THE COUNTY OF WEST LOTHIAN. Applications are invited for the appointment of ASSISTANT MEDICAL OFFICER OF HEALTH from registered medical practitioners (Female) holding the D.P.H. Although not essential it is desirable for the candidate to have held a house appointment in a maternity hospital. Every opportunity will be given to the successful applicant to obtain experience in all aspects of Local Health Authority work. Salary scale £1050–£50–£1200–£55–£1475 with placing according to experience. The post is superannuable. Possession of a car for which an allowance will be provided, is essential.

Applications, giving age and full details of qualifications and experience, together with the names of 3 referees, should be lodged with the undersigned not later than 27th July, 1957.

JOHN CALDER, County Clerk.

County Buildings, Linlithgow, 9th July, 1957.

THE MEDICAL SERVICE OF THE ROYAL NAVY

VACANCIES FOR MEDICAL OFFICERS

Candidates are invited for Short Service Commissions of 3 years, on termination of which a gratuity of £600 (tax free) is payable. Ample opportunity is granted for transfer to Permanent Commissions on completion of 1 year's total service. Officers so transferred are paid instead a grant of £1500 (taxable).

All entrants are required to be British subjects whose parents are British subjects, medically qualified, physically fit, and to pass an interview.

Full particulars from the Admiralty Medical Department, Queen Anne's Mansions, St. James's Park, London, S.W.1.

STOKE-ON-TRENT. CITY OF STOKE-ON-TRENT. PUBLIC HEALTH DEPARTMENT. Applications are invited from qualified medical practitioners for the post of ASSISTANT MEDICAL OFFICER, mainly on the Maternity and Child Welfare Services. Candidates should have experience in diseases of children and obstetrics. Opportunity will be given for hospital contact with pædiatrics and obstetrics. The possession of a D.P.H. or D.C.H. will be considered an additional qualification. The salary will be at the rate recommended by the Whitley Council, with commencing salary according to experience. The appointment will be subject to the provision of the National Health Services (Superannuation) Regulations, 1947, and the successful candidates will be required to pass a medical examination.

Forms of application may be obtained from the Medical Officer of Health, Public Health Department, Glebe-street, Stoke-on-Trent, and should be returned, accompanied by copies of not more than 3 recent testimonials, not later than Saturday, 10th August, 1957. HARRY TAYLOR, Town Clerk.

Miscellaneous

A leading Pharmaceutical Company desires to appoint a Chief of their Professional Department. Candidates should preferably be Medical Practitioners but Pharmacists or those possessing a good degree in Physiology or Biochemistry would be considered. Experience or strong personal interest in the medical promotion of pharmaceutical products is essential and ability to write well is important. A very good salary will be offered and a superannuation scheme is in operation.—Applications should contain fullest personal details and will be treated in strict confidence. Address, No. 309, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Deputy Medical Director. A leading pharmaceutical manufacturer in London invites applications for the newly created post of Deputy Medical Director. Candidates should be not less than 35, hold a British medical qualification, and preferably have had previous experience. A perfect knowledge of at least 1 foreign language is essential. The post is a permanent one, with a commencing salary of not less than £2500 per year with participation in the Company's Superannuation Scheme.—Reply: Address, No. 311, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

General Physician, West End, requires Assistant with definite view. Membership and/or D.M.R.D. desirable. Wholly private practice. Salary dependent on qualifications. About £2000 p.a.—Address, No. 308, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Belgian female medical laboratory assistant, 23 years, wishes to work 2 months in Laboratory or Hospital, possibly "au pair."—L. BIEN, 19 rue des XII Mois, Anvers, Belgium.

Park-street, W.1. Ground and first-floor consulting-rooms immediately available, suitable dentist or doctor.—Phone : MAY 3036, after 4 P.M.

Microscopes. Highest prices paid for good modern types. Send or bring your equipment for valuation.—WALLACE HEATON LTD., 127, New Bond-street, W.1.

"Pregnancy Diagnosis by the Xenopus Method," 24-hour service. Send specimens of urine and £1 1s. fee. Hæmatology, Biochemistry, Flame Photometry.—WELBECK BIOLOGICAL LABORATORIES, 26, Park-crescent, Portland-place, W.1 (MUSeum 5386–7).

Applicants for posts requiring testimonials copied or duplicated should communicate with MANTON SECRETARIAL SERVICE LTD., 98, Victoria-street, S.W.1 (Phone : VICtoria 0141), who are specialists in this kind of work.

Typewriting and Duplicating. First-class work at moder-ate prices by experienced medical typists. Electric machines.—SYBIL RANG, 21, Heath-street, Hampstead, London, N.W.3 (HAM 5329/0504).

Hypnotism. Will all doctors interested in this subject for Medical purposes please write to the Secretary, British Society of Medical Hypnotists, 126, Harley-street, W.1

MANAGEMENT SELECTION LIMITED have been retained to advise on the appointment of the

MEDICAL LIAISON OFFICER

for the Research Division of an American ethical pharmaceutical company. He will be responsible for establishing and maintaining personal contact with leading research scientists and clinicians and for enlisting their coöperation in research projects on new drugs produced by the Company's extensive research laboratories. There will be opportunities to visit U.S.A.

Candidates should preferably be qualified in pharmacology, biochemistry, or medicine. Their attainment records must indicate a high capacity to apply initiative and enthusiasm to an appointment which offers wide scope and responsibility.

Starting salary subject to negotiation, but at least £1750, plus use of car and generous fringe benefits : location London : minimum age 30.

Please send brief details in confidence, quoting reference 467, to R. A. DENERLEY, Management Selection Limited, 17, Stratton-street, London, W.1. No information will be disclosed to our clients until candidates know their identity and have given permission after personal discussion.

PUBLISHED by the PROPRIETORS, THE LANCET LIMITED, 7, Adam Street, Adelphi, in the County of London.
Printed by HAZELL, WATSON & VINEY, LTD., London and Aylesbury—Saturday, July 20, 1957.
PRINTED IN GREAT BRITAIN—Entered as Second Class at the New York, U.S.A., Office.

ACHROMYCIN* V

TETRACYCLINE BUFFERED WITH SODIUM METAPHOSPHATE

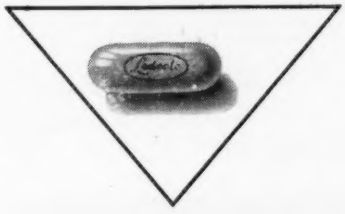
*Regd. Trademark

makes the therapy more secure

ACHROMYCIN V is an improved, oral form of ACHROMYCIN tetracycline—already recognised as today's foremost self-sufficient broad spectrum antibiotic. ACHROMYCIN V combines ACHROMYCIN tetracycline with sodium metaphosphate to provide more rapid absorption of tetracycline and higher levels of the antibiotic in the blood. This is achieved without any increase in the daily dosage of the antibiotic.

ACHROMYCIN V is presented in oral capsules containing 250 mg. ACHROMYCIN tetracycline and 380 mg. Sodium Metaphosphate.

Bottles of 16, 100 and 1000 Capsules



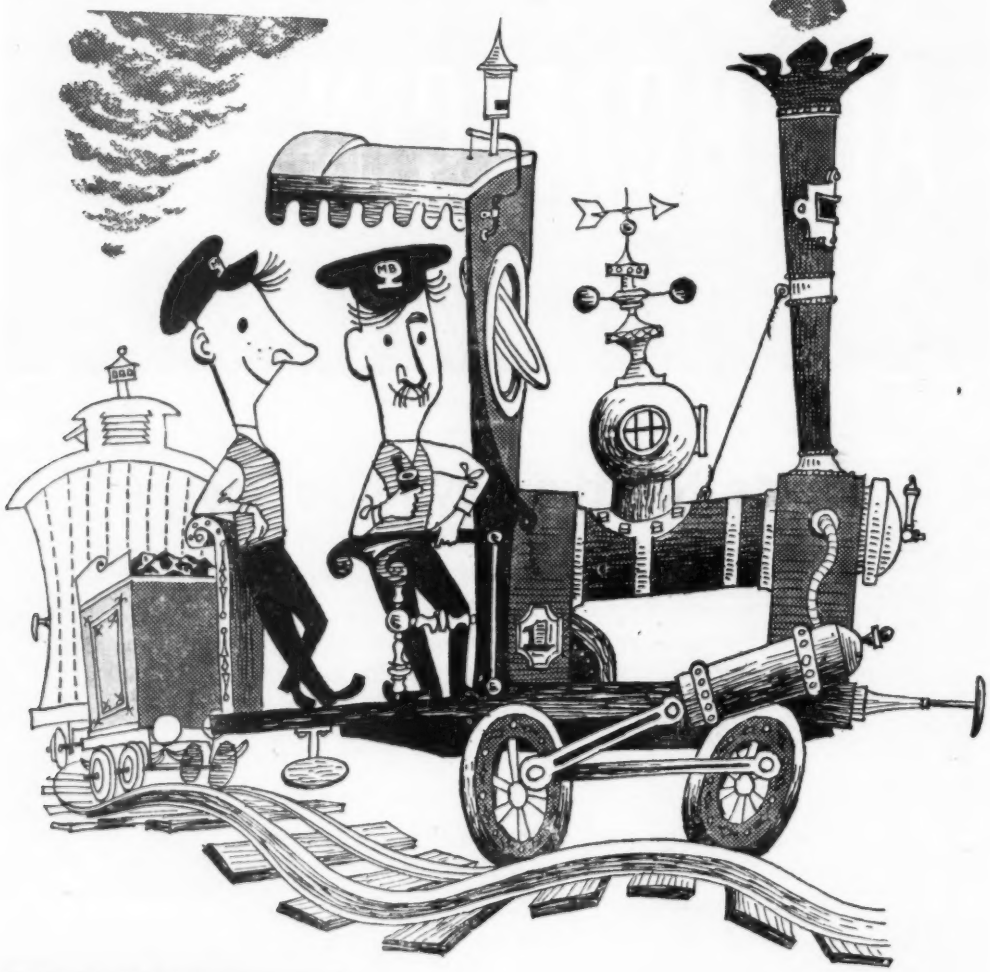
RECOMMENDED DOSAGE : As for ACHROMYCIN 1 Gm. daily for the average adult

CYANAMID 50 1907 1957

LEDERLE LABORATORIES DIVISION

Cyanamid OF GREAT BRITAIN LTD., London, W.C.2

Locomotion with no commotion



'AVOMINE'
trade mark brand
PROMETHAZINE
8-CHLOROTHEOPHYLLINATE
THE GENERAL PURPOSE ANTI-EMETIC

✻ *FOR THE PREVENTION AND TREATMENT OF TRAVEL SICKNESS*

✻ *AND IN NAUSEA AND VOMITING OF PREGNANCY*

Supplied as 25 mgm. tablets

Detailed information is available on request

MANUFACTURED BY MAY & BAKER LTD

An M&B *brand Medical Product* MA4546

DISTRIBUTORS
PHARMACEUTICAL SPECIALITIES (MAY & BAKER) LTD · DAGENHAM